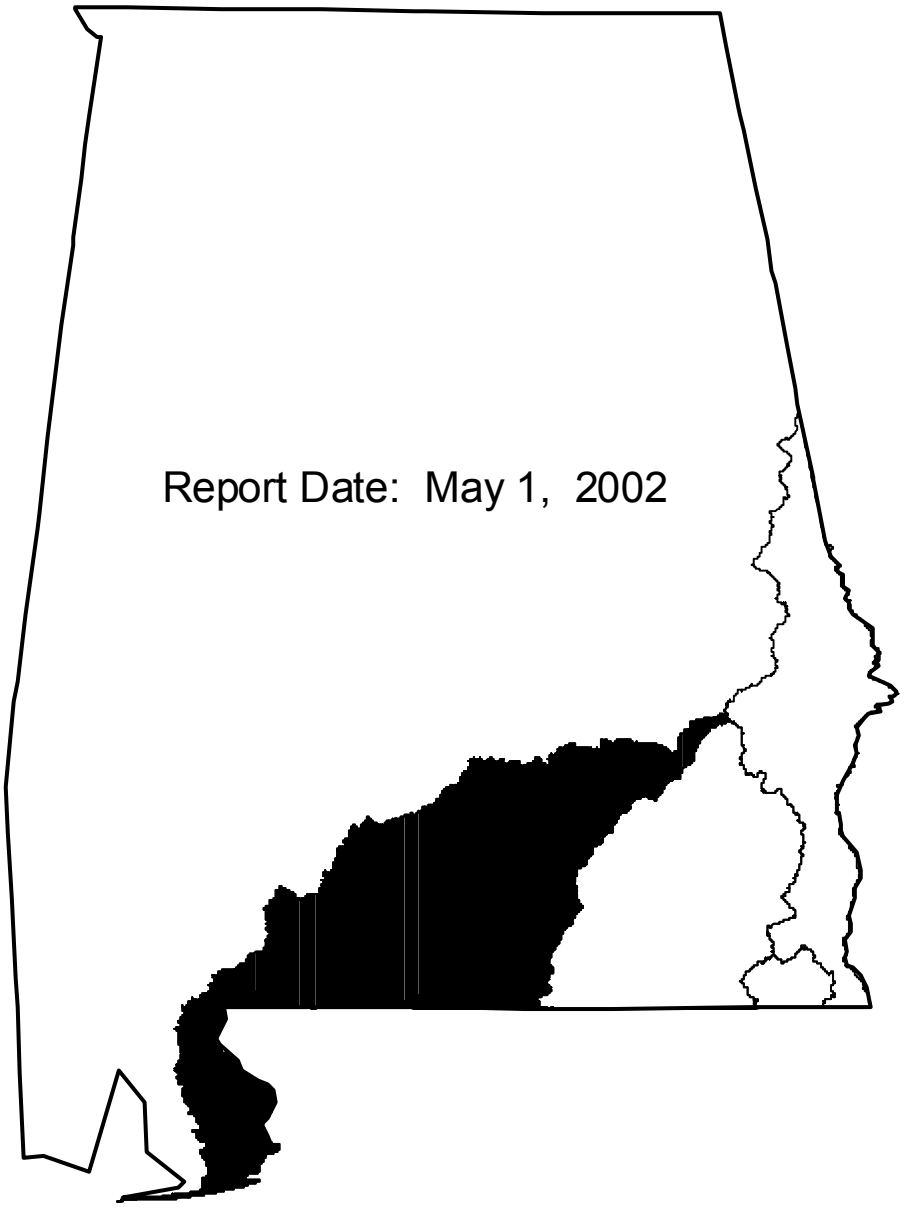
Nonpoint Source Screening Assessment of Southeast Alabama River Basins -- 1999

Volume II
Perdido and Escambia Basins



Report Date: May 1, 2002

Aquatic Assessment Unit
Montgomery Branch - Field Operations Division
Alabama Department of Environmental Management

NONPOINT SOURCE SCREENING ASSESSMENT OF SOUTHEAST ALABAMA RIVER BASINS – 1999

PERDIDO-ESCAMBIA RIVER BASINS

REPORT DATE: MAY 1, 2002

AQUATIC ASSESSMENT UNIT ✦ FIELD OPERATIONS DIVISION
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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EXECUTIVE SUMMARY

***Background*:** In 1996, the Alabama Department of Environmental Management (ADEM) adopted a basin-wide approach to nonpoint source monitoring and management using a repeating 5-year management cycle. Because of the 5-year rotation, basins are placed into groups so that all basins receive equal focus. Concentrating planning and implementation efforts within one basin group allows a focused review of available data and provides coordinated water quality monitoring and assessment efforts, efficient implementation of control activities on a geographic basis, and consistent and integrated decision-making for awarding CWA §319 funds.

During 1999, the Aquatic Assessment Unit (AAU) of the Field Operations Division completed basin wide screening assessment of the Southeast Alabama River basins. Results from the Chattahoochee-Chipola and Choctawhatchee-Pea basins were reported in 2 separate documents by Accounting Unit. Results from the Perdido-Escambia River basins are reported together in this document since they are treated as one basin-group in monitoring, planning, and implementation of ADEM's CWA §303(d) and TMDL programs. Land use information and assessment data available from each of the 66 sub-watersheds in the Perdido-Escambia basins are summarized.

Land use: Land use percentages and estimates of animal populations and sedimentation rates were obtained from information provided to ADEM by the Alabama Soil and Water Conservation Committee (ASWCC) and local Soil and Water Conservation Districts (SWCD). This information was provided on Conservation Assessment Worksheets completed in 1998 (FY97 CWA §319 Workplan Project #4) and entered into an ACCESS database by ADEM.

Estimates of percent land cover are presented in Table E-1. Land use throughout the Perdido-Escambia River basins was primarily forest mixed with cropland and pasture. Percent forest was lowest within the Perdido Bay Cataloging Unit (CU) due to higher percentages of cropland, open water, and urban areas. Percent cropland was also high within the Perdido River and Escambia River CUs. Percent pasture was highest in the Yellow River and Patsaliga River CUs.

Table E-1. Estimates of percent land cover within the Perdido-Escambia River basins CUs (ASWCC and SWCD 1998).

Cataloging Unit	Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
Yellow River	72%	11%	12%	0%	3%	1%	1%
Blackwater River	80%	10%	7%	0%	0%	1%	1%
Perdido River	73%	16%	3%	0%	5%	0%	3%
Perdido Bay	52%	15%	3%	0%	16%	9%	5%
Upper Conecuh River	76%	11%	8%	0%	2%	1%	2%
Patsaliga River	76%	7%	11%	0%	2%	0%	4%
Sepulga River	84%	6%	7%	0%	2%	0%	1%
Lower Conecuh River	88%	5%	3%	0%	2%	0%	1%
Escambia River	67%	21%	4%	2%	3%	0%	3%

Nonpoint source (NPS) impairment potential: The potential for NPS impairment was estimated for each sub-watershed in the SE Alabama basins using data compiled by the local SWCD (1998) and information on the number of current construction stormwater authorizations (Tables E-2a and E-2b). Forty (61%) of the 66 sub-watersheds were estimated to have a *moderate* or *high* potential for impairment from nonpoint sources. The main NPS concerns within each CU varied. Animal husbandry was a NPS concern within the Yellow River, Patsaliga River, and Sepulga River CUs.

There was a potential for impairment from silvicultural activities within several sub-watersheds within the Perdido River, Perdido Bay, Upper Conecuh River, and Patsaliga River CUs. Runoff from pasture and cropland was estimated to be a concern within 20 and 14 sub-watersheds, respectively. Impairment from urban runoff and development was a concern within 29 (44%) of the sub-watersheds.

Table E-2a. Number of sub-watersheds with moderate or high ratings for each NPS category

Cataloging Unit	Total # sub-watersheds	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Yellow R.	11	8	7	2	2	7	0	1	2
Blackwater R.	6	0	0	0	0	1	0	0	0
Perdido R.	13	11	0	0	4	0	2	10	3
Perdido Bay	3	3	0	0	2	0	1	3	3
U. Conecuh R.	5	2	1	1	1	2	0	3	1
Patsaliga R.	6	5	4	0	0	6	0	4	0
Sepulga R.	7	3	3	0	0	3	0	2	0
L. Conecuh R.	8	2	0	1	0	0	3	1	0
Escambia R.	7	6	0	1	4	1	3	0	0

Table E-2b. Number of sub-watersheds with moderate or high ratings for each point source or urban category

Category	% Urban	Development	Septic tank failure
Yellow River	2	2	0
Blackwater River	0	0	0
Perdido River	5	5	0
Perdido Bay	3	3	0
Upper Conecuh River	1	4	0
Patsaliga River	1	1	0
Sepulga River	1	2	0
Lower Conecuh River	3	4	0
Escambia River	3	2	0

***Historical data/studies*:** The majority of assessments conducted within the Perdido-Escambia River basins were from 4 major projects conducted by ADEM. Data included both monitored and evaluated assessments. Monitored assessments are based on chemical, physical, and/or biological data collected using commonly accepted and well-documented methods. Evaluated assessments are based on observed conditions, limited water quality data, water quality data older than 5 years, or estimated impacts from observed or suspected activities.

Results of monitored assessments were used in this report to assess habitat, biological, and chemical conditions within a sub-watershed. Monitored assessments were conducted during ADEM's Ecoregional Reference Site Program and §303(d) Waterbody Monitoring Program. Evaluated assessments were conducted in conjunction with ADEM's ALAMAP Program and Clean Water Strategy Project. Data collected during each project are provided in the tables and appendices listed below. A summary of each project, including lead agency, project objectives, data collected, and applicable quality assurance manuals, is provided in the appendices.

Table E-3. Projects that have generated monitored assessment information. Tables (T) and Appendices (F) where these data are provided in the report are also listed.

Project	Tables and appendices	
	Perdido	Escambia
ADEM's Ecoregional Reference Site Program	T-6a, T-7a, F-1a, F-1b	T-6b, T-7b, F-1a
ADEM's §303(d) Waterbody Monitoring Program	T-6a, T-7a, F-2	T-6b, T-7b, F-2
ADEM's ALAMAP Program	F-3a, F-3b	F-3a, F-3b
ADEM's Clean Water Strategy Project	F-4	F-4

Assessments conducted the SE Alabama NPS Screening Assessment: Sub-watersheds were selected for assessment if recent monitoring data were not available, potential impacts from point sources or urban areas were minimal, cattle were present within the sub-watershed, and the sub-watershed was ranked as a priority by the local SWCD. In addition, sampling was coordinated among projects, such as ALAMAP and §303(d) Monitoring to maximize the number of streams assessed and to prevent duplication of effort. Assessments were conducted in 10 sub-watersheds in the Perdido-Escambia River basins.

***Sub-watershed summaries*:** Current and historical monitoring data were combined to provide a comprehensive assessment. A summary of information available for each of the 66 sub-watersheds is provided. The summaries are organized into 2 main sections by Accounting Unit. Section I discusses the 4 cataloging units and 33 sub-watersheds located within the Perdido River basins; Section II outlines information related to the 5 cataloging units and 33 sub-watersheds within the Escambia River basins. Each summary discusses land use, NPS impairment potential, assessments conducted within the sub-watershed, and the NPS priority rating based on available data. The summaries point out significant data and reference appropriate tables and appendices. Assessment of habitat, biological, and chemical conditions are based on long-term data from ADEM's Ecoregional Reference Site Program (ADEM 2000a). Tables referenced in the summaries are located at the end of each section. Appendices are located at the end of the report.

Sub-watershed assessments: Habitat, chemical/physical, and biological indicators of water quality were monitored at 4 stations within 4 sub-watersheds. These data are summarized in Tables 12a and 12b. Habitat and macroinvertebrate assessments were conducted at each of the 28 stations. Fish community Index of Biotic Integrity (IBI) assessments were conducted at 14 of these stations. The overall condition of a station was rated as the lowest biological assessment result obtained. Twenty of the 28 stations were assessed as *fair* or *poor*. It should be noted, however, that results of assessments conducted during 1999 may have been affected by drought conditions and should be reassessed under normal flow regimes to verify impairment status.

***Priority sub-watersheds*:** Seven NPS priority sub-watersheds were identified within the Perdido River and Escambia River Accounting Units (Table E-4). One (14%) was located within the Yellow River CU, 3 (43%) in the Patsaliga River CU, 2 (28%) in the Lower Conecuh River CU, and 1 (14%) was located within the Escambia River CU.

Table E-4. Sub-watersheds recommended for NPS priority status.

Sub-watershed Number	Sub-watershed Name	Lowest Station Assessment	Suspected Cause(s)	Suspected nonpoint source(s)
0103-050	Yellow River	Fair	Sedimentation	Animal husbandry, pasture runoff
0302-030	Upper Patsaliga Creek	Poor	Nutrient enrichment	Animal husbandry, silviculture, pasture runoff
0302-040	Little Patsaliga Creek	Poor	Sedimentation	Animal husbandry, silviculture, pasture runoff
0302-050	Lower Patsaliga Creek	Fair	Sedimentation	Silviculture, pasture runoff
0304-010	Conecuh River	Poor	Nutrient enrichment, sedimentation	Aquaculture, urban development
0304-090	Little Escambia Creek	Poor	Unknown	Unknown
0305-030	Sizemore Creek	Fair	Pathogens, nutrient enrichment	Crop runoff, mining activities, silviculture

Yellow River (0314-0103-050): Macroinvertebrate and fish assessments indicated biological impairment at Poplar Creek. SWCD land use estimates indicated animal husbandry, pasture runoff, and sedimentation to be NPS concerns within the sub-watershed.

Upper Patsaliga Creek (0314-0302-030): Macroinvertebrate and fish assessments indicated biological impairment at Pond Creek. Water quality data showed nutrient enrichment to be a possible cause of impairment. The main NPS concerns in the sub-watershed were animal husbandry, silviculture, and pasture runoff.

Little Patsaliga Creek (0314-0302-040): Biological assessments indicated impaired macroinvertebrate and fish communities at both Cane Creek and Little Patsaliga Creek. Little Patsaliga Creek was identified as a priority sub-watershed. Habitat assessments completed at LPCC-4 suggest sedimentation to be a possible source of impairment. SWCD estimates indicated animal husbandry, silvicultural activities, and pasture runoff to be NPS concerns within the sub-watershed.

***Lower Patsaliga Creek (0314-0302-050)*:** Assessment results indicated biological impairment at both the unnamed tributary to Patsaliga Creek and Pineywoods Creek. Site visits suggested possible sedimentation problems and SWCD land use information indicated silviculture and pasture runoff to be nonpoint source concerns within the sub-watershed.

Conecuh River (0314-0304-010): Biological impairment was detected at reaches located on Folley Creek, Maye Mill Creek, Menden Hall Creek, Maye Creek, and Silas Creek. Water quality sampling suggested sedimentation and nutrient enrichment as potential causes for the impairment. Aquaculture and urban development were identified as concerns within the sub-watershed based on SWCD information.

***Little Escambia Creek (0314-0304-090)*:** Bioassessment results indicated impaired biological conditions at Narrow Gap Creek. SWCD estimates indicated a *moderate* potential for impairment from mining activities.

***Sizemore Creek (0314-0305-030)*:** Biological conditions were impaired at 2 sites on Sizemore Creek. Water quality samples suggested pathogens and nutrient enrichment to be potential causes of impairment. Information compiled by the SWCD suggested crop runoff and mining activities to be the primary NPS concerns within the sub-watershed. Silviculture has also been noted within the sub-watershed during site reconnaissance.

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LIST OF ABBREVIATIONS

Abbreviation	Interpretation
§	Section
ADEM	Alabama Department of Environmental Management
ALAMAP	Alabama Monitoring Assessment and Program
AU	Animal Unit as defined by ADEM CAFO Rules
Br	Branch
CAFO	Concentrated Animal Feeding Operation
cfs	Cubic Feet per Second
Chem.	Chemical/Physical Water Quality
Co.	County
Confl.	Confluence
Cr	Creek
CU	Cataloging Unit
CWA	Clean Water Act
CWAP	Clean Water Action Plan
CWS	Clean Water Strategy
ds	Downstream
EIS	Environmental Indicators Section of ADEM's Field Operations Division
EPA	U.S. Environmental Protection Agency
FOD	Field Operations Division
GSA	Geological Survey of Alabama
IBI	Index of Biotic Integrity (fish community)
Macroinv.	Aquatic Macroinvertebrate
mg/l	Milligrams per Liter
mi^2	Square miles
Mod.	Moderate
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint Source
nr	Near
R	River
Rd	Road
RM	River Mile
SAPIIS	Southeast Alabama Poultry Industry Impact Study
SSWCC	State Soil and Water Conservation Committee
SWCD	Soil and Water Conservation District
TMDL	Total Maximum Daily Load
ug/g	Micrograms per Gram
ug/l	Micrograms per Liter

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INTRODUCTION

The Alabama Department of the Environmental Management (ADEM) is charged with monitoring the status of the state's water quality pursuant to the Clean Water Act and the Alabama Water Pollution Control Act. Under the Clean Water Act (CWA) of 1977, the EPA emphasized programs addressing the chemical contamination of the nation's waters (National Research Council 1992). State and federal programs initiated to meet these water quality guidelines have been largely successful in controlling and reducing certain kinds of chemical pollution from point source discharges (National Research Council 1992, ADEM 1996c). The detection, assessment, and control of impairment from point sources is fairly well understood because the pollutants, their concentrations, and probable points of impact are known (National Research Council 1992, EPA 1997a)

Nonpoint source (NPS) pollution, defined as any unconfined or diffuse source of contamination, accounts for approximately two-thirds of the water quality impairments in Alabama's streams (ADEM 2001). It is generated irregularly and often associated with storm water runoff or atmospheric deposition (USEPA 1997a). Nonpoint source impairment is associated with land use within a watershed, such as agriculture, silviculture, and mining. The pollutants, their concentrations, and/or their source(s) may not be known or well defined. Because of their transient nature, these pollutants may not be detected by periodic water quality measurements (National Research Council 1992).

The 1987 amendments to the Clean Water Act added section 319, which established a national program to assess and control nonpoint source pollution. Under this program, states are asked to assess their nonpoint source pollution problems and submit these assessments to EPA. In 1996, ADEM adopted a basin-wide approach to water quality monitoring using a 5-year rotating basin group cycle. Concentrating monitoring efforts within one basin provides the Department with a framework for more centralized management and implementation of control efforts and provides consistent and integrated decision making for awarding CWA §319 NPS funds.

In 1997, the Aquatic Assessment Unit (AAU) of the Field Operations Division developed basin-wide screening assessment methods that could be used to identify sub-watersheds with the highest potential for NPS pollution, assess water quality within selected sub-watersheds, and prioritize sub-watersheds most impaired by NPS pollution. The projects are completed in 4 phases. During Phase I, land use information, Departmental regulatory databases, available historical data, and other assessment information are used to identify data gaps and to prioritize sub-watersheds with the greatest potential for NPS impairment. During Phase II, selected sites are assessed using macroinvertebrate and fish community assessments, habitat assessments, and collection of chemical data. Assessments are based on long-term data from ADEM's Ecoregional Reference Site Program. During Phase III, data collected during Phase II, as well as existing data and assessment information, are analyzed to evaluate the level of impairment within each sub-watershed and determine the cause and source of impairment. A comprehensive report is completed during the final phase.

The AAU has completed basin-wide NPS screening assessments of the Black Warrior (1997) and Tennessee (1998) basins. The results of these assessments have been reported in two separate documents (ADEM 1999h, ADEM 2000g). During 1999, the AAU completed a basin-wide screening assessment of the Chattahoochee-Chipola, Choctawhatchee-Pea, and Perdido-Escambia River basins. This document summarizes the assessment information and results obtained within the Perdido-Escambia River basins. Data collected within the Chattahoochee and Chipola River basins are reported together in Volume I (ADEM 2002a). Volume II presents the results obtained within the Choctawhatchee-Pea River basins (ADEM 2002b).

METHODOLOGY

Study Area

The Perdido River and Escambia River basins include 2 accounting units, 9 hydrologic cataloging units (CUs), and 66 sub-watersheds within 5,344 mi^2 of 12 counties in south and south-central Alabama (USDASCS 1995). Both basins flow through northeast Florida and drain into the Gulf of Mexico. The Perdido River basin contains 4 CUs. The Yellow River (01340103) and Blackwater River (03140104) CUs are located in Escambia, Covington, Crenshaw, and Coffee Counties and drain into Florida from the northeast. The Perdido River (03140106) and Perdido Bay (03140107) CUs are primarily located in Baldwin County (Fig. 1a). The Escambia River basin contains 33 sub-watersheds within a 3,849 mi^2 area of Escambia, Monroe, Conecuh, Covington, Crenshaw, Coffee, Butler, Pike, Lowndes, Montgomery, and Bullock Counties (Fig. 1b).

Ecoregions

The Perdido-Escambia basins are located in 8 subecoregions of the *Southeastern Plains (65)* and the *Southern Coastal Plain (75)* ecoregions (figs. 2a and 2b).

Southeastern Plains (65): The ***Southern Hilly Gulf Coastal Plain (65d***) drains portions of the Escambia River Accounting Unit. This subecoregion is characterized by dissected irregular plains and gently rolling hills. It developed over diverse east-west trending bands of sand, clay, and marl formations. Broad cuestas with gentle southern slopes and steeper north-facing slopes are common. The elevations and relief are relatively high for the Southeastern Plains Ecoregion. Consequently, streams located within the sub-ecoregion are characterized by relatively high gradient. The natural vegetation of oak-hickory-pine forest grades into southern mixed forest to the south. Land cover is mostly forest and woodland with some cropland and pasture.

Most of the Perdido River basins and the southern half of the Escambia River basin are located within the ***Southern Pine Plains and Hills subecoregion (65f)*** (figs. 2a and 2b). Elevations within the subecoregion are generally 200-550 feet, with relief of 100-200 feet between hill and stream bottoms. The hill summits and higher elevations are composed of Citronelle formation, generally sandy, gravelly, porous, and more resistant to erosion than the older underlying sandstones. Most of this subecoregion is woodland and forest with some cropland and pasture, with extensive agriculture along the eastern border of the subecoregion (Griffith et. al 2001).

The ***Dougherty Plains subecoregion (65g)*** stretches into the eastern border of the Perdido River basins. The subecoregion is characterized by flat to rolling plains with elevations generally 100-300 feet. Soils are sandy to clayey over residuum geology derived from solution and collapse of limestone. The streams in this area are characterized by braided channels and slightly to moderately tannic water. The floodplains are large with low stream banks and shaded channels.

The ***Southeastern Floodplains and Low Terraces (65p)*** comprise a riverine ecoregion of large sluggish rivers and backwaters with ponds, swamps, and oxbow lakes. River swamp forests of bald cypress, water tupelo, and oak-dominated bottomland hardwood forests provide important wildlife corridors and habitat. The subecoregion defines the riparian area along the Conecuh River within the Escambia River basin.

A very small portion of the Escambia River basin is located within the ***Buhrstone/Lime Hills (65q***) subecoregion. The subecoregion has some of the most rugged terrain of the Alabama coastal plain. The rough, hilly topography is attributed to the hardened beds of claystone, sandstone, and resistant limestones. Many of the streams have relatively high gradients and hard-rock bottoms.

Southern Coastal Plain (75): The coastal areas of the Perdido River and Perdido Bay CUs are

located in 2 subecoregions of the Southern Coastal Plain Ecoregion (Fig. 2a). The Gulf Coast Flatwoods (75a) subecoregion is a narrow region of nearly level terraces and delta deposits composed of Quaternary sand and clays. Wet, sandy flats and broad depressions that are locally swampy are usually forested, while some of the better-drained land has been cleared for pasture or crops. The Gulf Barrier Islands and Coastal Marshes (75k) subecoregion contain salt and brackish marshes, dunes, beaches, and barrier islands that enclose the Mississippi Sound and Mobile Bay. To date, ADEM has not developed assessment guidelines for this ecoregion.

Topography/Soils

Four different soil regions influence the basins of Southeast Alabama. The majority of the area is influenced by Coastal Plain soils with the northern portions of the area draining primarily the Piedmont Plateau, and Blackland Prairie soils. Flood plain soils influence drainage in areas of the southern tier counties along the Choctawhatchee and Conecuh Rivers (NRCS 1997).

Underlying geologic formations are among the factors that influence natural water quality. Physiographic sections within Perdido River and Escambia River Accounting Units include the Piedmont Upland and the East Gulf Coastal Plain. The Piedmont Upland Section is the non-mountainous section of the "older Appalachians". Piedmont geology is complex, consisting of high and low grade metamorphic and igneous rocks, including quartzite, phyllite, slate, schist, amphibolite and gneiss. Streams of this section flow over bedrock, between steep hillsides. They are generally swift and have high gradients. The East Gulf Coastal Plain Section is characterized by gentle rolling hills, sharp ridges, prairies and broad alluvial floodplains. The greater part of this section is underlain by permeable sands and gravel, which have excellent water-bearing properties. Streams in this section are generally slow and have muddy sand bottoms. (Mettee et al. 1996)

Preliminary Selection of Sub-watersheds

Sub-watershed selection included review of data from previous assessments within the Southeast Alabama basins to concentrate efforts in areas not recently assessed. Additionally, Departmental municipal and industrial databases were reviewed to screen out areas primarily impacted by point sources. Sub-watersheds were not considered for assessment if they were not primarily located in Alabama or were relatively small (<30 mi^2) (USDASCS 1995).

The Alabama Soil and Water Conservation Committee (ASWCC) and local Soil and Water Conservation Districts (SWCD) provided ADEM with estimates of land use, animal populations and sedimentation rates on conservation assessment worksheets completed by each county during 1998 (FY97 CWA 319 Workplan Project #4) (Tables 2, 3, and 4). Additional land use information was obtained from EPA published estimates of percent land cover for the entire southeastern U.S. (EPA 1997a). These estimates were based on leaves-off Landsat TM data acquired in 1988, 1990, 1991, 1992, and 1993. Recent ground-truthing of these estimates have indicated 40-60% accuracy due to changes in land use within the last 10 years (Olson and Gore 2000, Pitt 2000). A comparison of land use estimates from the conservation assessment worksheets and the EPA Landsat data is provided in Tables 2a and 2b. The finer land use categories defined by the EPA landuse dataset are provided in Appendix A-1. Descriptions of the Landsat TM data are provided in Appendix A-2.

The data compiled by the local SWCD was used as a desktop screening tool to target sub-watersheds with the greatest potential for impairment from nonpoint sources. Criteria used to identify target sub-watersheds included a priority rating of 1-5 by the SWCD, <20% urban area, <0.04 septic tanks/acre, and cattle present within the sub-watershed. Based on location of previous

assessments, concentrated point sources, and analysis of SWCD data, 27 sub-watersheds were selected for assessment.

Nonpoint Source Impairment Potential

The local SWCD Conservation Assessment Worksheets were used to assess the potential for NPS impairment in several categories: animal husbandry, cropland, pasture runoff, mining, forestry practices, and sedimentation. Where the information was available, 3 categories were summed to assess the potential for impairment from forestry practices: percent acres clear-cut, percent of acres harvested annually, and percent of forest needing improvement. This information was provided by the local SWCD and the Alabama Forestry Association.

The potential for NPS impairment from activities associated with animal husbandry was estimated. Potential of impairment among the different types of animals was standardized by converting animal population estimates into animal densities. Animal Unit (AU) estimates were calculated for each of the animal types based on the current conversion factors found in ADEM Administrative Code Chapter 335-6-7 (Table 1a). These values considered characteristics such as live weight, equivalent waste quantity, and constituent composition (limiting nutrients, moisture, additive compounds, etc.). (ADEM 1999b). Animal units were further standardized to animal unit densities (AU/acre of sub-watershed).

Table 1a. Current Conversion Factors found in ADEM Admin. Code Chapter 335-6-7 (CAFO Program Rules).

Animal Type (CAFO Definition)	Numbers of Animals	Animal Unit (AU) Equivalent
Cattle (slaughter, feeder, dairy heifers)	1	1.0
Dairy (mature)	1	1.4
Swine (>55 lbs.)	1	0.4
Poultry (Broiler & Layer)	125	1.0

Percent urban land, number of current construction/stormwater authorizations, and septic tanks were used to identify sub-watersheds potentially impacted by urban land uses.

Each sub-watershed was assigned an impairment potential for each category. Table 2 shows the range of values used to define low, moderate, and high impairment potential for each category. These ranges were determined using the mean and standard deviation of SE Alabama basin data for each parameter. A value of less-than-or-equal-to the calculated mean was assigned a *low* potential. Values greater than the mean, but equal-to-or-less-than two-standard deviations above the mean were assigned a *moderate* potential and values greater than two-standard deviations above the mean were assigned a *high* potential for NPS impairment.

For each sub-watershed and CU, the impairment potential for each category was converted from low, moderate, and high to scores of 1, 3, and 5, respectively. These values were summed to rate overall NPS impairment potential. Scores greater than or equal to the 90th percentile were rated as *high*; scores greater than the 50^{th} percentile, but less than the 90^{th} percentile were *moderate*; scores less than the 50^{th} percentile were low. Sub-watersheds and CUs that scored in the *moderate* range, but received a *high* rating in at least two categories were rated as *high* for overall NPS potential. Sub-watersheds ranked as high in both rural and non-rural NPS potential were further evaluated to determine the point-source location in relation to potential assessment sites.

Table 1b. Range of values used to define Low, Moderate, and High potential for impairment for each rural NPS category.

Category	Low	Moderate	High
% Cropland	<16%	16% to 39%	>39%
% Pastureland	<9%	9% to 20%	>20%
% Mining	<0.1%	0.1% to 0.4%	>0.4%
% Forestry Practices	<21%	21% to 49%	>49%
% Aquaculture	<0.01%	0.01% to 0.05%	>0.05%
Animal Units/acre	<0.08	0.08 to 0.19	>0.19
Sedimentation rate (tons/ acre)	<4	4 to 12	>12
Overall Rural NPS Potential	**<10**	**10 to 17**	**>17**

Table 1c. Range of values used to define Low, Moderate, and High potential for impairment for each non-rural NPS category.

Category	Low	Moderate	High
% Urban	<4%	4% to 14%	>14%
# construction/ stormwater authorizations	<3	3 to 6	>6
Failing septic tanks/acre	<0.01	>0.01	---

The nonpoint source categories and ranges used for the Southeast Alabama Basins may not be applicable to water quality conditions and activities in other basins of the State. They are intended to be descriptive, but are open to differing interpretations considering alternative data analysis techniques and are subject to refinement as data availability and analysis warrants.

The local SWCD also evaluated streams for each of the sub-watersheds located in their respective counties. These evaluations were discussed during public meetings and were used to rank the sub-watersheds as to their perceived priority for conducting water quality improvement projects. The 1st priority was given to the sub-watershed with the greatest need. A single sub-watershed may have more than one priority, if two or more of the counties containing the sub-watershed gave it a top-five priority ranking. This information was used to supplement the sub-watershed estimates of NPS impairment potential.

Habitat Assessment

Biological condition of the fish and aquatic macroinvertebrate communities is generally correlated with the quality of available habitat (without considering influences of water quality). The presence of stable and diverse habitat usually supports a diverse and healthy aquatic fauna (Barbour and Stribling 1991). Therefore, habitat quality was assessed at each site to evaluate stream condition and to assist in the interpretation of biological data. Primary, secondary, and tertiary habitat parameters were evaluated to assess overall habitat quality at each site. Primary habitat parameters evaluate the availability and quality of substrate and instream cover. They include those characteristics that directly support aquatic communities, such as substrate type, stability, and availability. Secondary habitat parameters evaluate channel morphology, which is determined by flow regime, local geology, land surface form, soil, and human activities. Channel morphology indirectly affects the biological communities by affecting sediment movement through a stream (Barbour and Stribling 1991). Secondary habitat parameters include an evaluation of flow regime, sinuosity/instream geomorphology, and sediment deposition and scouring. Tertiary habitat characteristics evaluate bank structure and riparian vegetation. Bank and riparian vegetation

prevent bank erosion and protect the stream from stormwater and impervious surface runoff. The presence of overhanging riparian vegetation also determines the primary energy source for aquatic macroinvertebrate communities—the base of the fish food chain (Vannote et al. 1980). Tertiary parameters include bank condition, bank vegetative protection, and riparian zone width.

The revised EPA habitat assessment forms evaluate riffle/run (Appendix B-1) and glide/pool (Appendix B-2) streams separately (EPA 1997b). The primary habitat parameters of the glide/pool habitat assessment place more emphasis on habitat characteristics important to this stream-type, primarily pool structure and variability. Because the revised habitat assessment forms more accurately assess habitat quality and degradation to glide/pool streams, the ADEM began using the revised forms in 1996 (ADEM 1996c). In addition, because they measure impairment to habitat quality, the scores (converted into percent maximum) were comparable between stream types and can be used to evaluate streams throughout the basin.

One physical characterization sheet was filled out at each station (Appendix C). Depending upon stream geomorphology, each team member completed a riffle/run or glide/pool habitat assessment.

Aquatic Macroinvertebrate Assessment: Multi-habitat EPT Method

The aquatic macroinvertebrate communities were assessed at all wadeable sites during May and June 1999. A modified multihabitat EPT bioassessment method was used to evaluate the integrity of the aquatic macroinvertebrate communities (ADEM 1999f). The multihabitat EPT method is a screening technique used in watershed screening assessment studies. Since assessments were conducted at multiple sites over a large area, collection effort and analysis time were decreased by processing the samples in the field and focusing on the collection of the pollution sensitive Ephemeroptera, Plecoptera, and Trichoptera (EPT) taxa. EPT taxa were collected from all productive in-stream habitats available at each sampling site. These included: riffles, CPOM (course particulate organic matter), rocks and/or logs, undercut banks, and sand. The samples collected from each habitat were field processed and returned to the laboratory for identification. The total number of EPT families collected from each station was compared to data collected from least-impaired ecoregional reference sites to indicate the health of each stream. A designation of *excellent, good, fair,* or *poor* was assigned to each station.

Fish Community Index of Biotic Integrity (IBI) Assessment

Fish community assessments were conducted during July of 1999. The fish assessments were conducted at established reference sites and stream reaches in which the aquatic macroinvertebrate assessment borders between two impairment categories. The fish IBI sampling protocol, developed by Geological Survey of Alabama (O'Neil and Shepard 1998), uses a time-based multihabitat approach. A 3-person crew sampled all available habitat including riffles, snags, pools, runs and rootbanks, using an 8 ft long, 3/16 inch mesh minnow seine and backpack electro-shocker. Each sample required 30 to 40 minutes to complete. Samples were fixed with 10% formalin and transported to the laboratory. At the laboratory samples were identified to species, counted, weighed and preserved in 70% ethanol.

The data were analyzed using 12 metrics of the fish community related to species richness (# of species) and composition, trophic composition, and fish abundance and condition. The total number of fish captured was standardized to catch-per-hour for purposes of calculating one metric. Each metric was given a score according to the associated criteria and totaled to determine the Index of Biotic Integrity (IBI) score. The integrity of the fish community was determined to be *excellent, good, fair, poor, or very poor* based on the total IBI score.

Chemical Assessment

Water chemistry samples were analyzed for parameters selected as indicators of impairment from land-uses present within the Southeast Alabama river basins, including sedimentation (total suspended solids, total dissolved solids), nutrient enrichment (total phosphate, nitrate/nitrite, BOD-5), and metals.

Stream flow estimates, routine field parameters, and water quality samples were collected at twenty-seven stations in July of 1999 (Appendices D-1, D-2). Chemical analyses of water samples were conducted by the ADEM's Central Laboratory in Montgomery in accordance with analysis and quality assurance procedures outlined in Quality Assurance Manual for the ADEM Central Laboratory (1999j) . Water quality samples for laboratory analysis were collected, preserved, and transported to the ADEM Laboratory as described in ADEM Field Operations Standard Operating Procedures and Quality Control Assurance Manual, Volume I - Physical/Chemical (2000f). Duplicate field parameters and samples were collected during 10% of the sampling events.

Chain of Custody

Sample handling and chain-of custody procedures were used for all biological and chemical samples as outlined in ADEM Field Operations Standard Operating Procedures and Quality Control Assurance Manual, Volumes I and II to ensure the integrity of all samples collected (1999f, 2000f).

Final Assessment and Ranking of Sub-watersheds

Fish and macroinvertebrate communities may respond to changes in water quality in different ways and to varying degrees over time. Consequently, monitoring changes in biological communities can detect impairment from nonpoint source pollution, which can be infrequent or low-level. The fish community seems particularly well suited to identifying impairments due to habitat modification. The macroinvertebrates provide more information about water column effects as potential causes of impairment. In addition, each group has different recovery rates with macroinvertebrates communities generally quicker to recover than fish communities.

The results of fish and aquatic macroinvertebrate assessments were used to identify priority sub-watersheds. Assessments of *poor* or *fair* for each assessment (severely impaired or moderately impaired) were used to designate priority sub-watersheds. Physical/chemical data and land use information were used to evaluate the potential source(s) of impairment.

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SECTION I: PERDIDO RIVER BASINS

Accounting Unit (031401)

Land use: The Perdido River basin contains 4 CUs and 33 sub-watersheds. The Yellow River (01340103) and Blackwater River (03140104) CUs are located in Escambia, Covington, Crenshaw, and Coffee Counties and drain into Florida from the northeast (Fig. 1a). The Perdido River (03140106) and Perdido Bay (03140107) CUs are primarily located in Baldwin County (Fig.1a). The Perdido River basins drain portions of 4 subecoregions of the Southeastern Plains and Southern Coastal Plain Ecoregions (Fig. 2a).

Table R-1a summarizes SWCD estimates of percent land cover within the 4 CUs. Land use within the Yellow and Blackwater River CUs was estimated to be primarily forest with some row crop and pastureland. The Perdido River CU was still primarily forested, but percent cropland and urban area were slightly higher. Percent forest was lowest in the Perdido Bay CU due to higher proportions of cropland, urban area, and open water.

Table R-1a. Estimates of percent land cover within the Yellow River, Blackwater River, Perdido River and Perdido Bay CUs (ASWCC and SWCD 1998).

Cataloging Unit	Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
Yellow River	72%	11%	12%	0%	3%	1%	1%
Blackwater River	80%	10%	7%	0%	0%	1%	1%
Perdido River	73%	16%	3%	0%	5%	0%	3%
Perdido Bay	52%	15%	3%	0%	16%	9%	5%

NPS impairment potential: The overall potential for NPS impairment was estimated to be *moderate* or *high* in 22 sub-watersheds (Fig. 3a). The potential for impairment from silviculture was a concern within the Perdido River and Perdido Bay CUs (Fig. 4a). Impairment from animal husbandry was of greater concern within the Yellow River CU (Fig. 5a). There was a *moderate* potential for impairment from sedimentation within 8 sub-watersheds (Fig. 6a).

Historical data/studies: The majority of assessments conducted within the Perdido River basins were collected during 4 major projects conducted by ADEM (Fig. 7a). These data include both monitored and evaluated assessments. Monitored assessments are based on chemical, physical, and/or biological data collected using commonly accepted and well-documented methods. Evaluated assessments are based on observed conditions, limited water quality data, water quality data older than 5 years, or estimated impacts from observed or suspected activities.

Results of monitored assessments were used in this report to assess habitat, biological, and chemical conditions within a sub-watershed. Monitored assessments were conducted during ADEM's Ecoregional Reference Site Program (Appendices F-1a and F2b) and §303(d) Waterbody Monitoring Program (Appendix F-2a). Habitat and biological data are provided in Tables 6b and 7b, respectively. Chemical and physical data are provided in the appendices listed above. Evaluated assessments were conducted in conjunction with ADEM's ALAMAP Program (Appendices F-3a and F-3b) and Clean Water Strategy Project (Appendix F-4a). A summary of each project, including lead agency, project objectives, data collected, and applicable quality assurance manuals, is provided with the appropriate appendices.

Assessments conducted during the SE Alabama NPS Screening Assessment: Sub-watersheds were selected for assessment if recent monitoring data were not available, potential impacts from point sources or urban areas were minimal, and the sub-watershed was ranked as a priority by the local SWCD. In addition, sampling was coordinated among projects, such as ALAMAP and §303d Monitoring to maximize the number of streams assessed and to prevent duplication of effort. An assessment was conducted within the Yellow River sub-watershed (050) of the Yellow River CU (Fig. 7a).

***Sub-watershed summaries*:** Current and historical monitoring data were combined to provide a comprehensive assessment. A summary of information available for each of the 33 sub-watersheds is provided. The summaries are organized into 4 sections by CU. Each summary discusses land use, NPS impairment potential, assessments conducted within the sub-watershed, and the NPS priority rating based on available data. The summaries point out significant data and reference appropriate tables and appendices. Assessment of habitat, biological, and chemical conditions are based on long-term data from ADEM's Ecoregional Reference Site Program (ADEM 2000a). Tables referenced in the summaries are located at the end of the Section I of this report. Appendices are located at the end of the report.

Sub-watershed assessments: Habitat, chemical/physical, and biological indicators of water quality were monitored at 4 stations within 4 sub-watersheds. These data are summarized in Table 12a . Habitat and macroinvertebrate assessments were conducted at each of the stations (Fig. 8a). Fish Community Index of Biotic Integrity (IBI) assessments were conducted at 2 of these stations (Fig. 9a). The overall condition of each station was rated as the lowest biological assessment result obtained. Three of the 4 stations were assessed as *fair* or *poor*.

***Priority sub-watersheds*:** Yellow River (050) was identified as a priority sub-watershed (Fig. 10a)

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Figure 1a. Sub-Watersheds of the Perdido River Accounting Unit (0314-01) in Southeast Alabama.

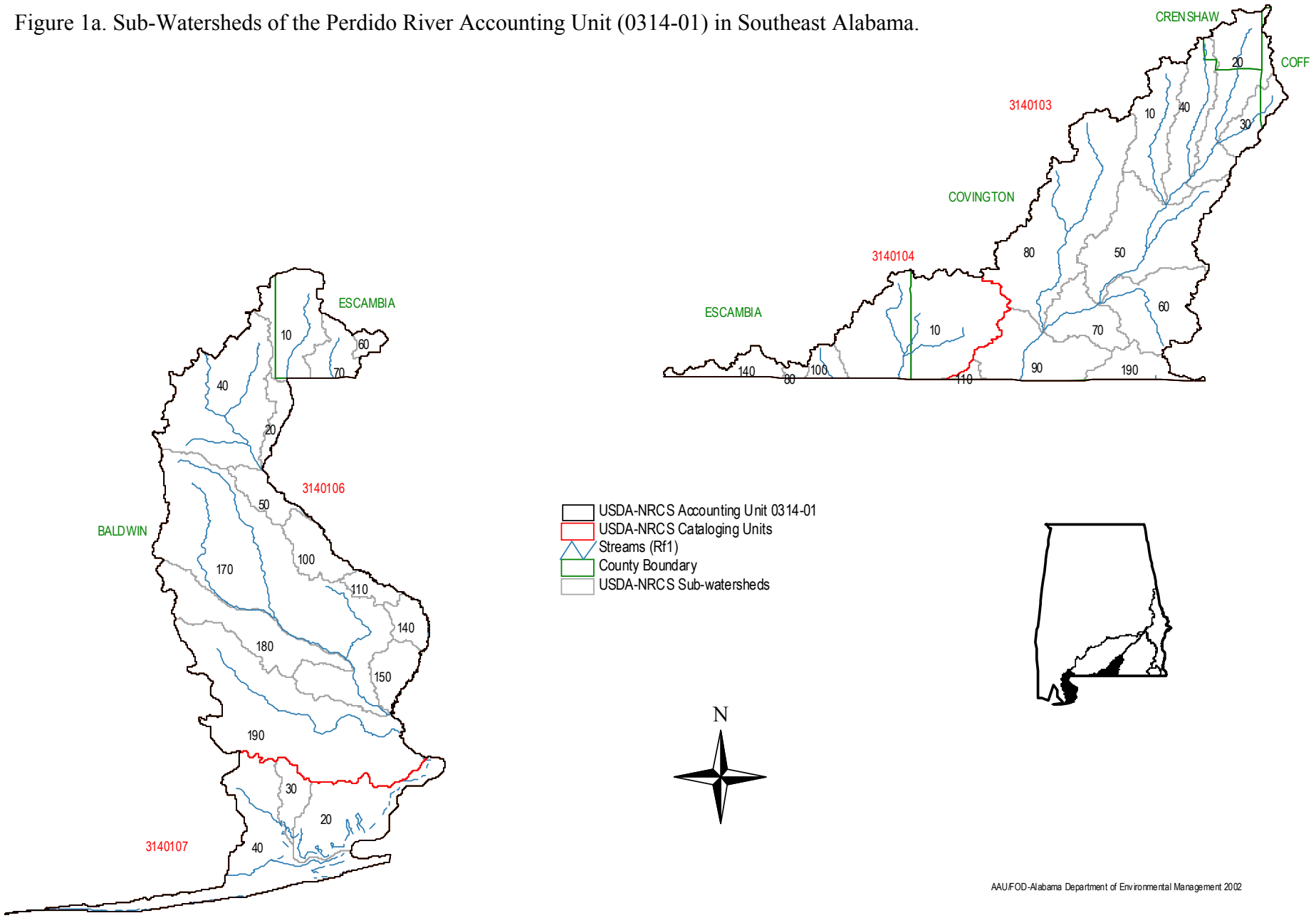

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Figure 2a. Level IV Ecoregions of the Perdido River Accounting Unit (0314-01).

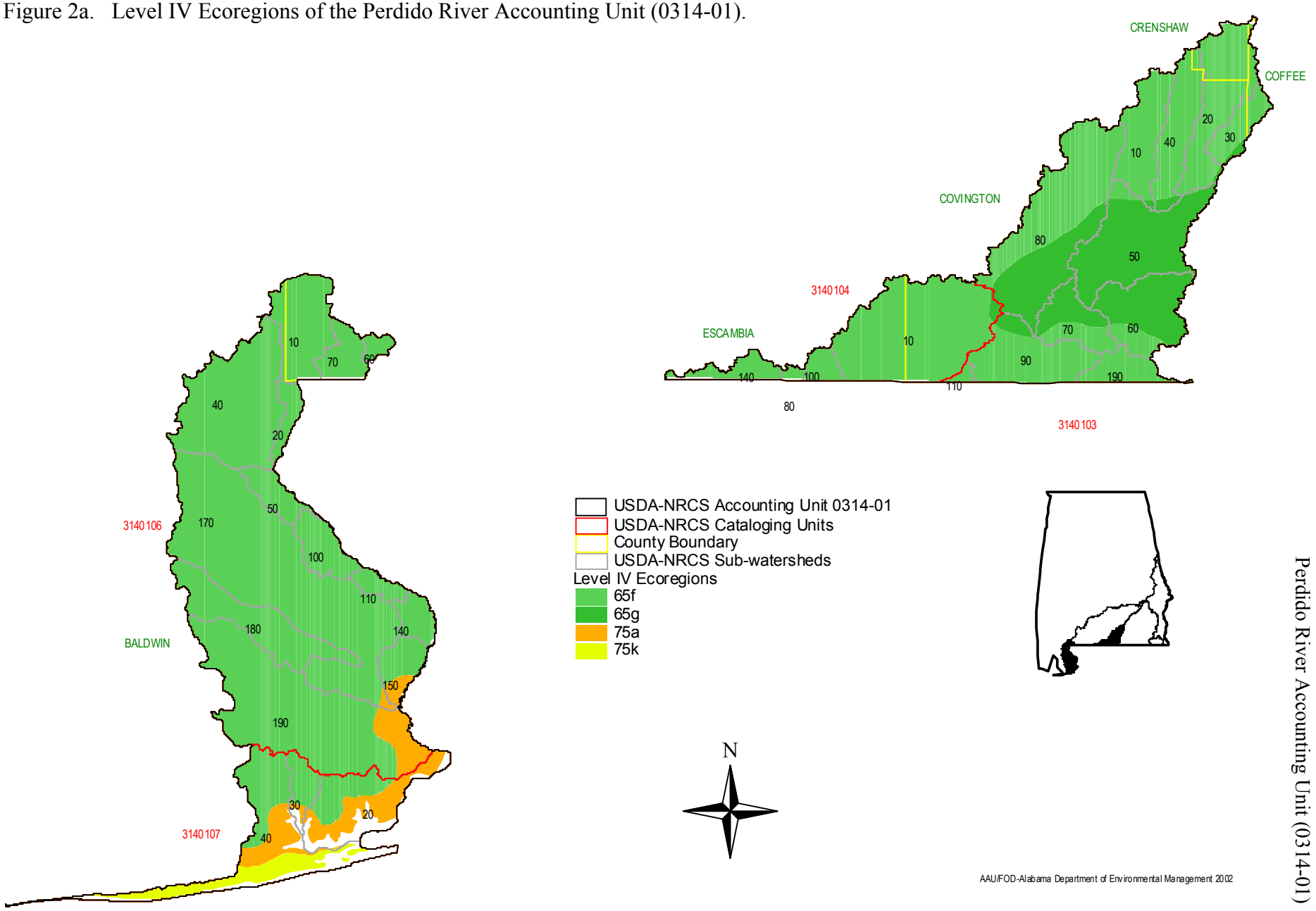

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Figure 3a. Estimates of NPS Impairment Potential for Sub-Watersheds of the Perdido River Accounting Unit (0314-01).

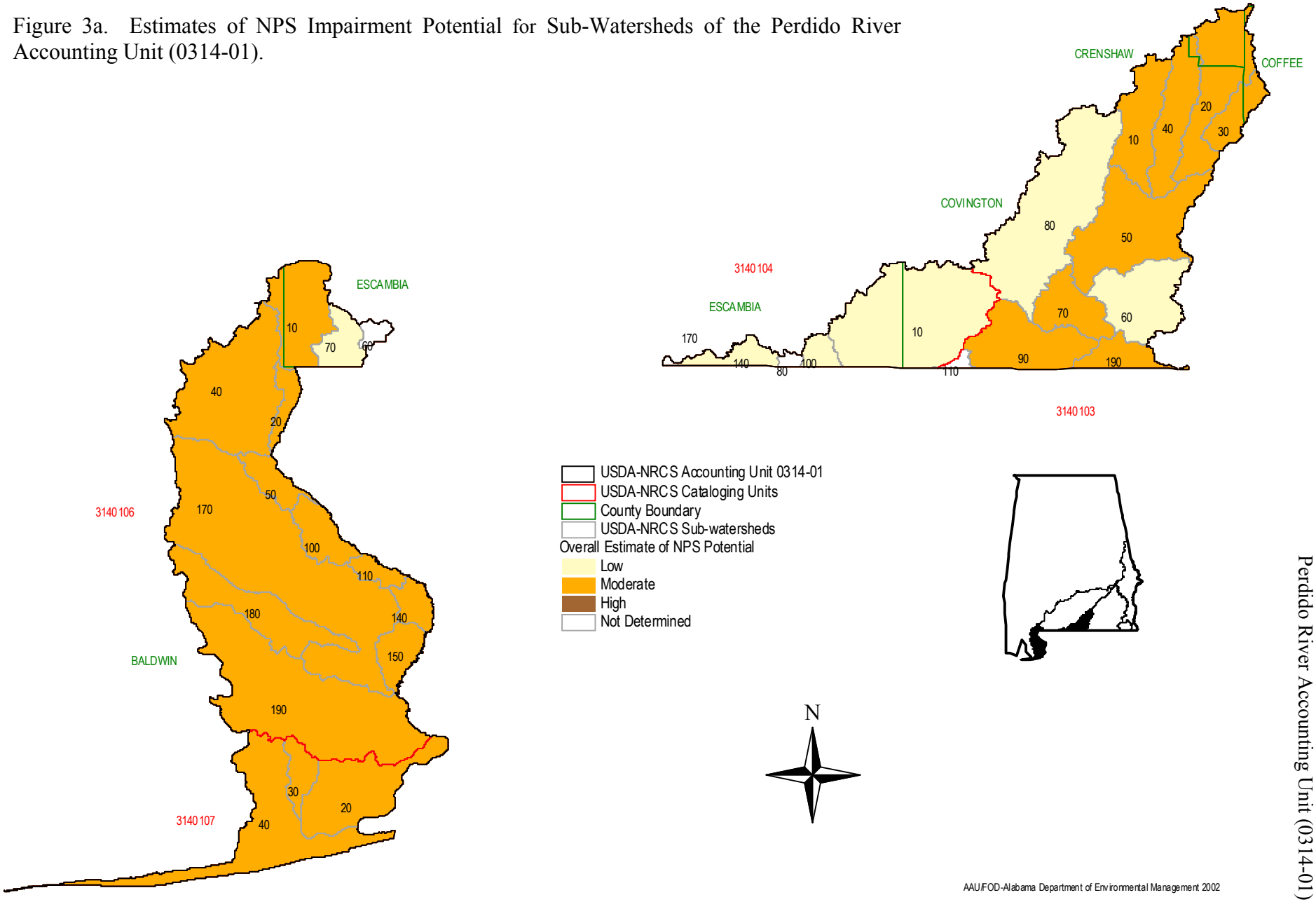

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Figure 4a. Estimates of NPS Impairment Potential from Silviculture Based upon Local SWCD Forestry Activity Estimates for the Perdido River Accounting Unit (0314-01).

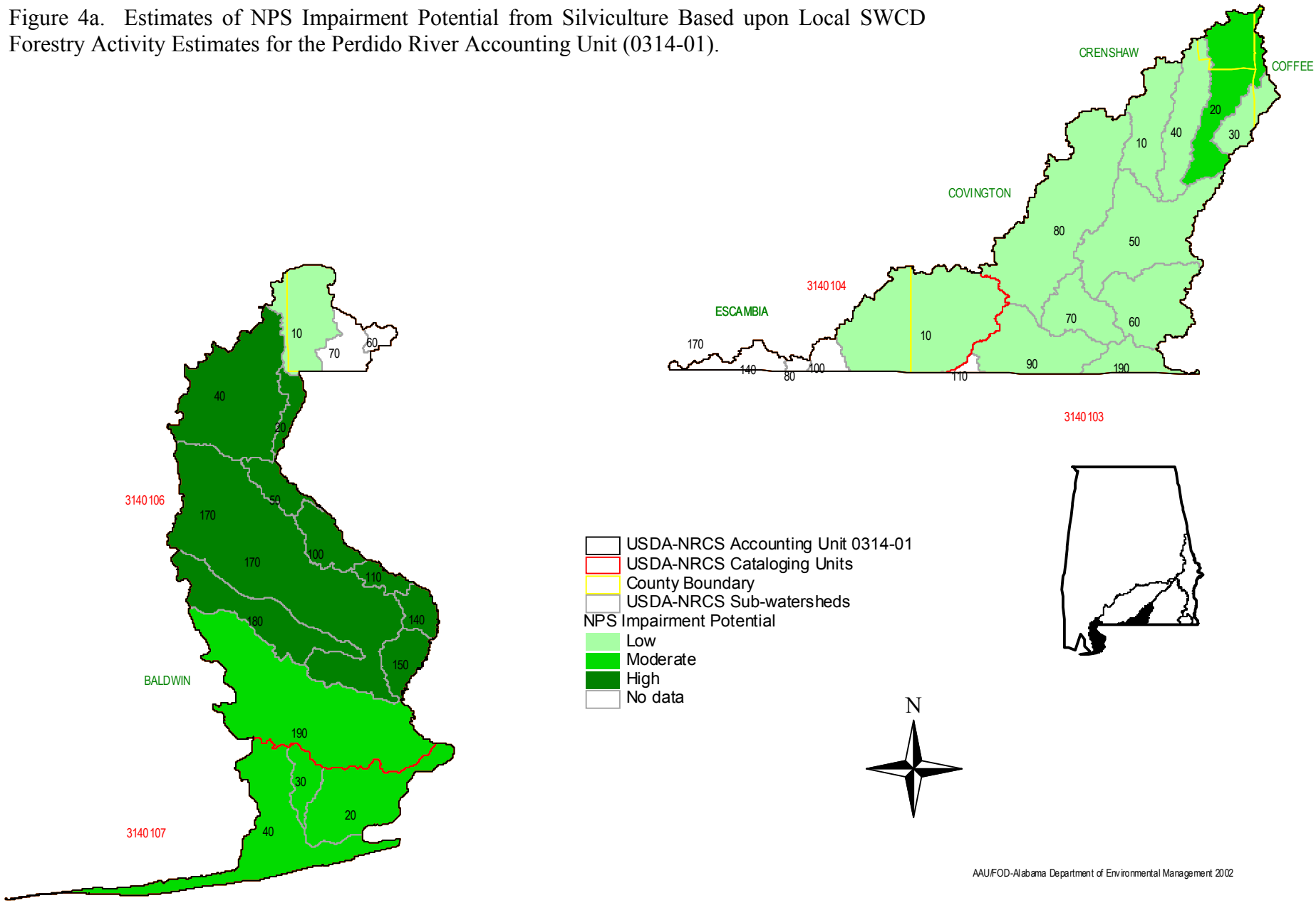

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Figure 5a. Estimates of NPS Impairment Potential from Animal Husbandry Activities Based upon Local SWCD Animal Population Estimates for the Perdido River Accounting Unit (0314-01).

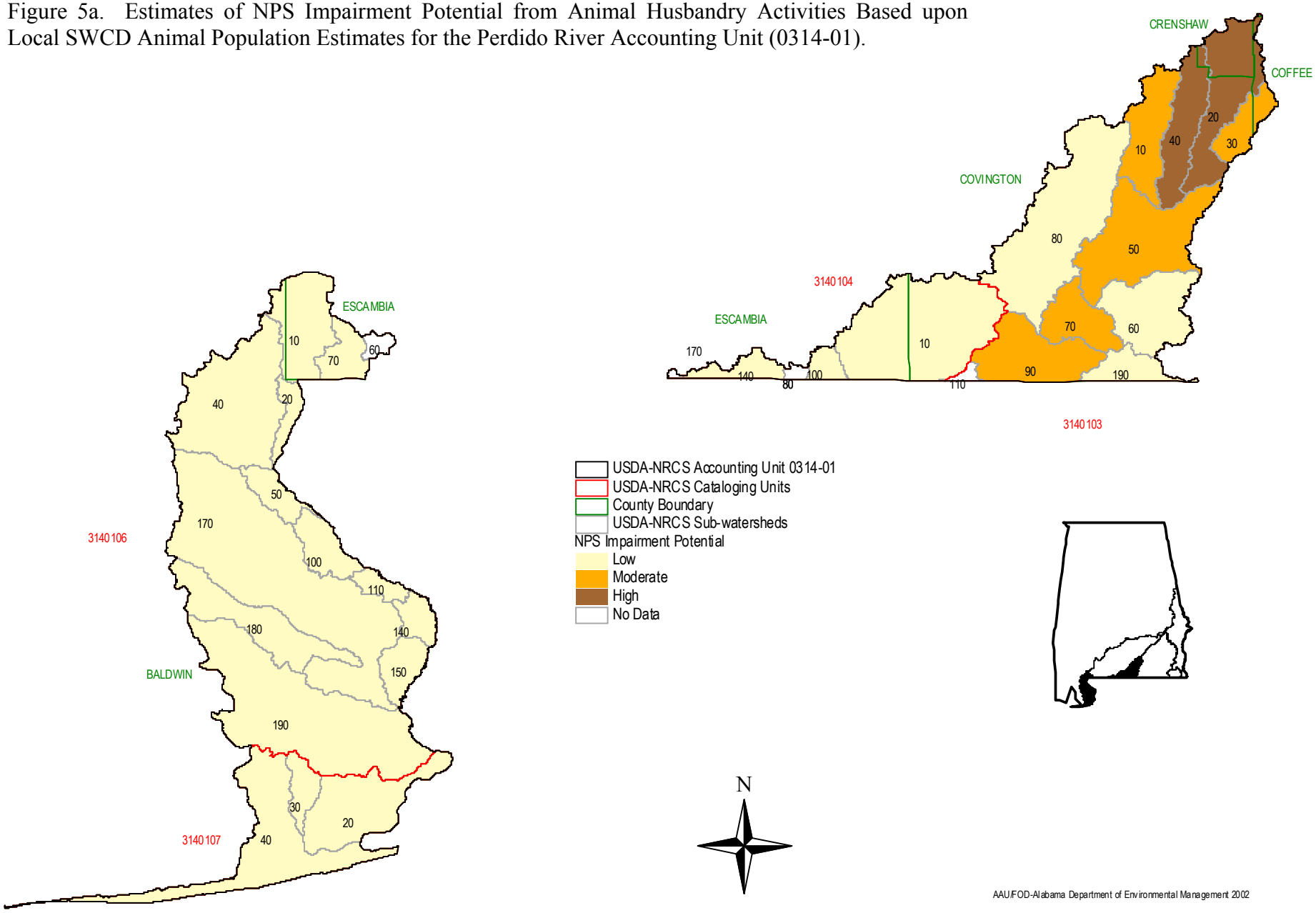

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Figure 6a. Estimates of NPS Impairment Potential from Sedimentation Based upon Local SWCD Sedimentation Rate Estimates for the Perdido River Accounting Unit (0314-01).

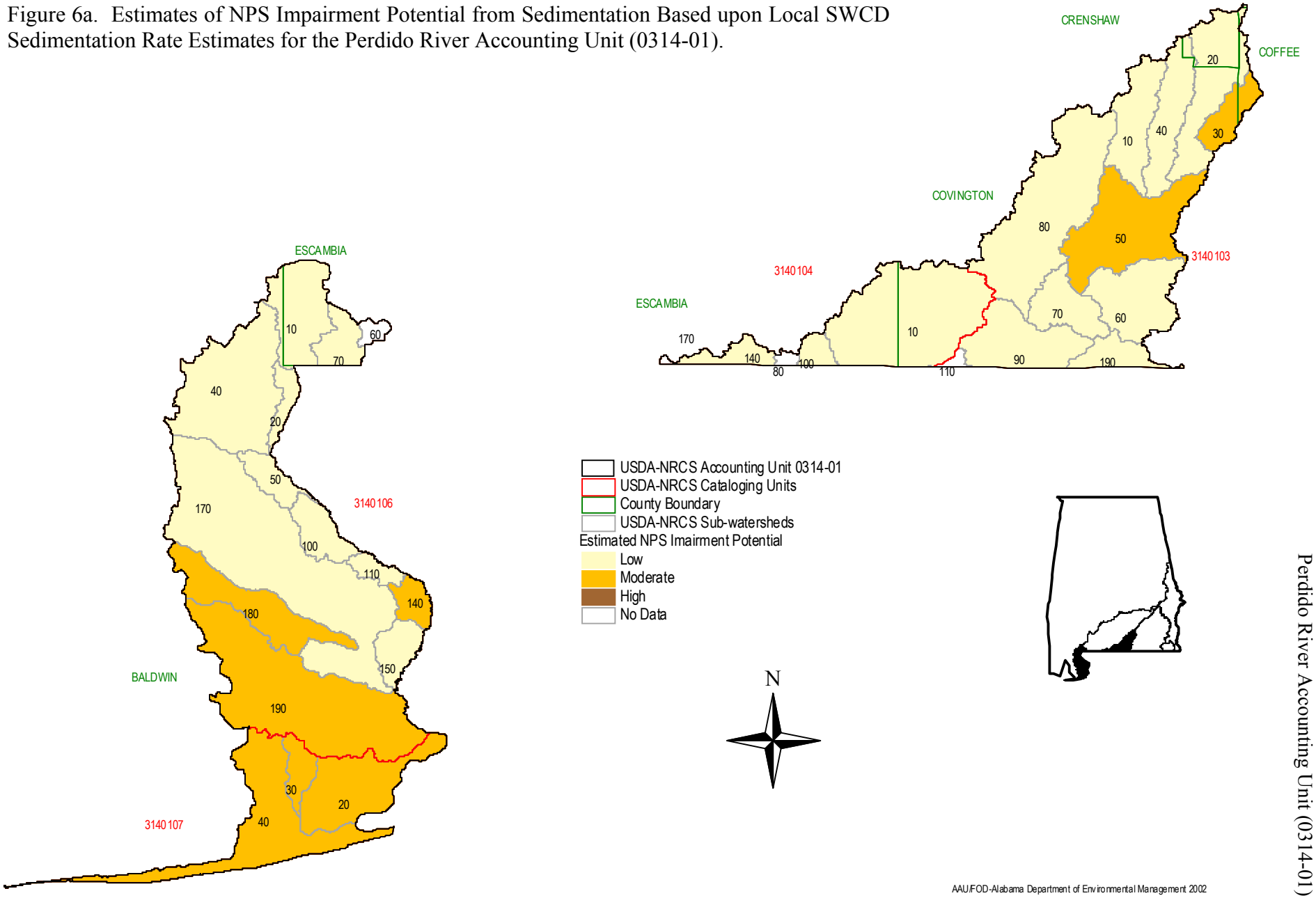

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Figure 7a. Stations Sampled Within the Perdido River Accounting Unit (0314-01) During Projects Conducted by ADEM.

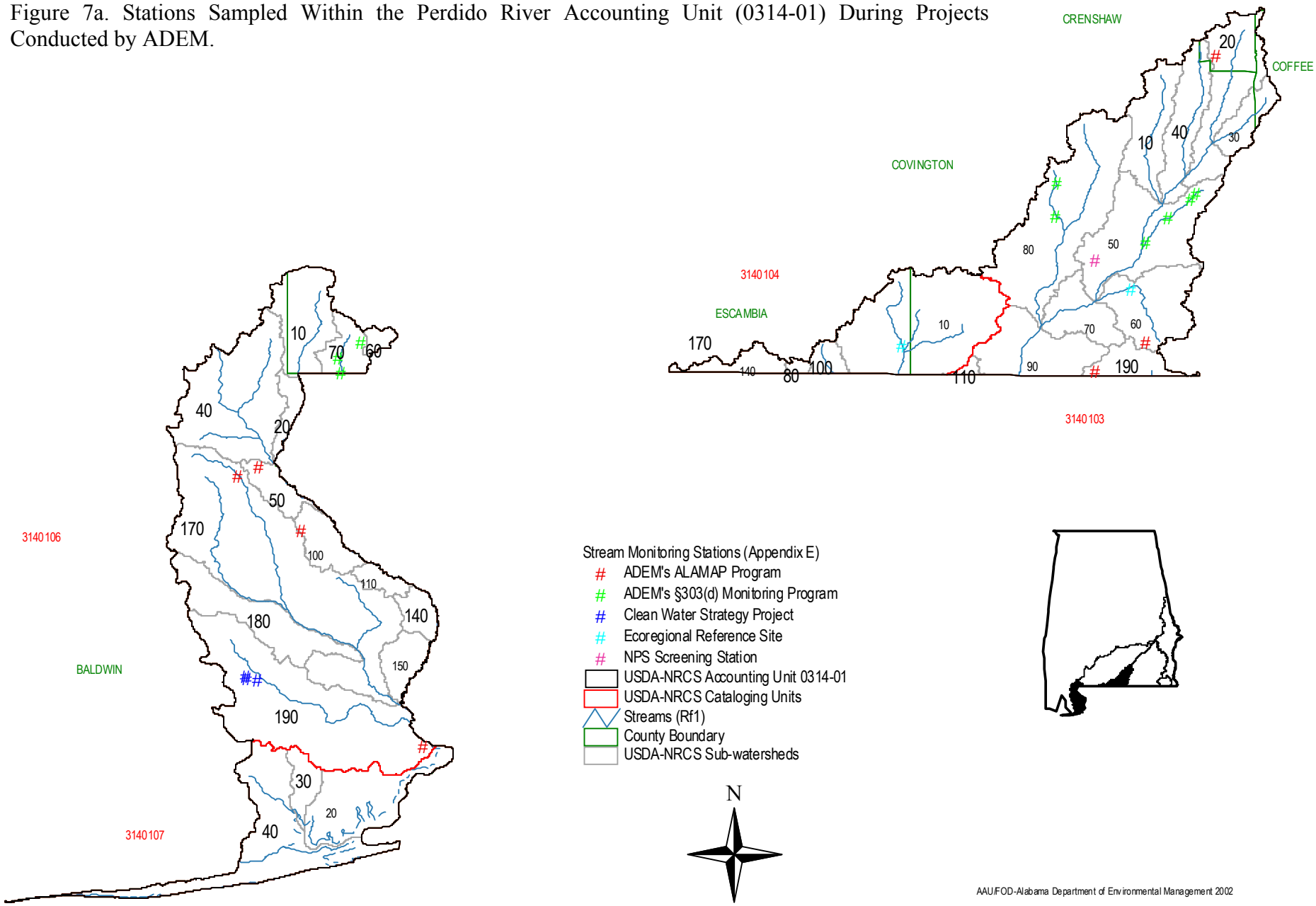

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Figure 8a. Habitat and Aquatic Macroinvertebrate Assessments Conducted in the Perdido River Accounting Unit (0314-01).

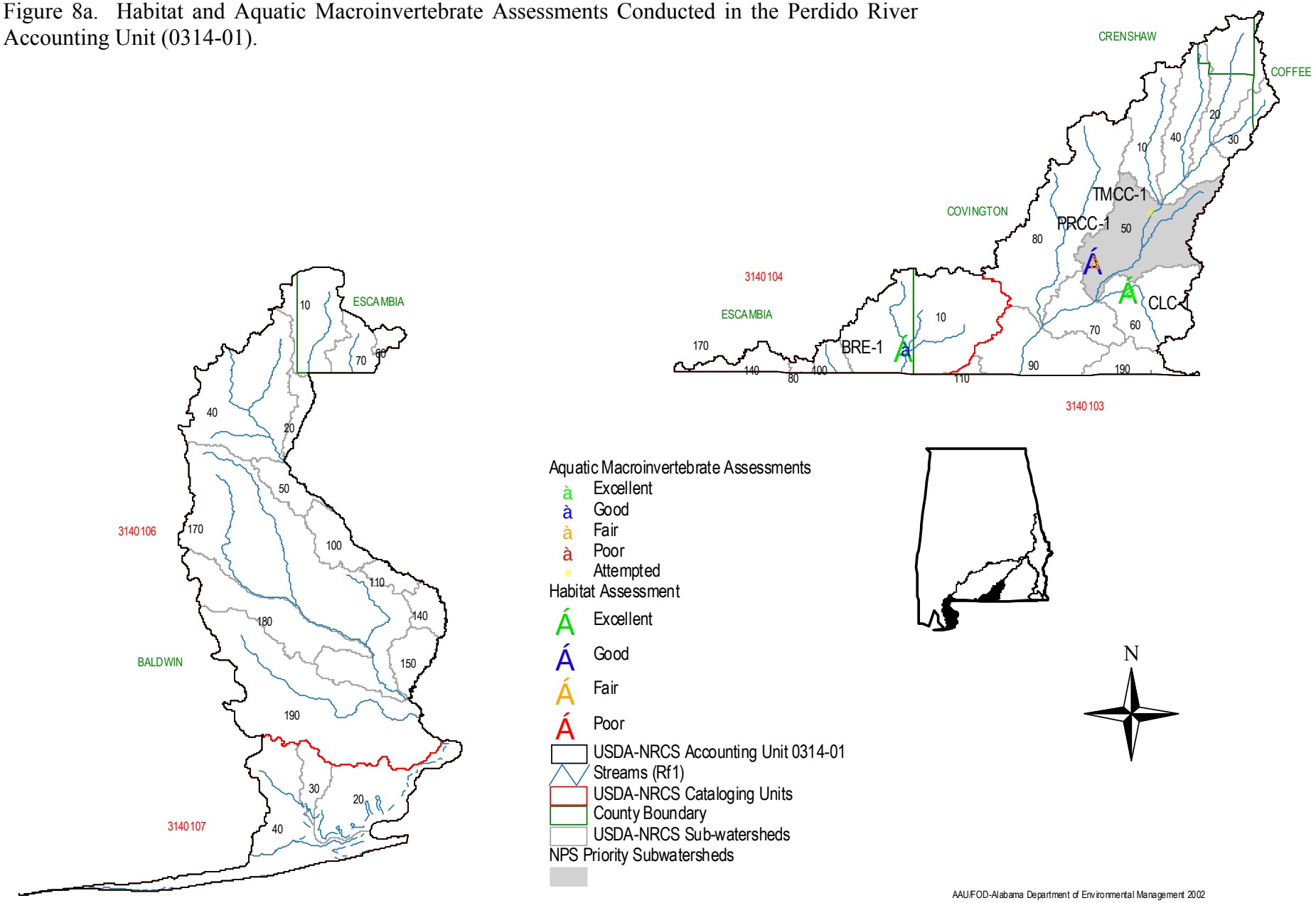

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Figure 9a. Results of Fish Community IBI Assessments Conducted in the Perdido River Accounting Unit (0314-01).

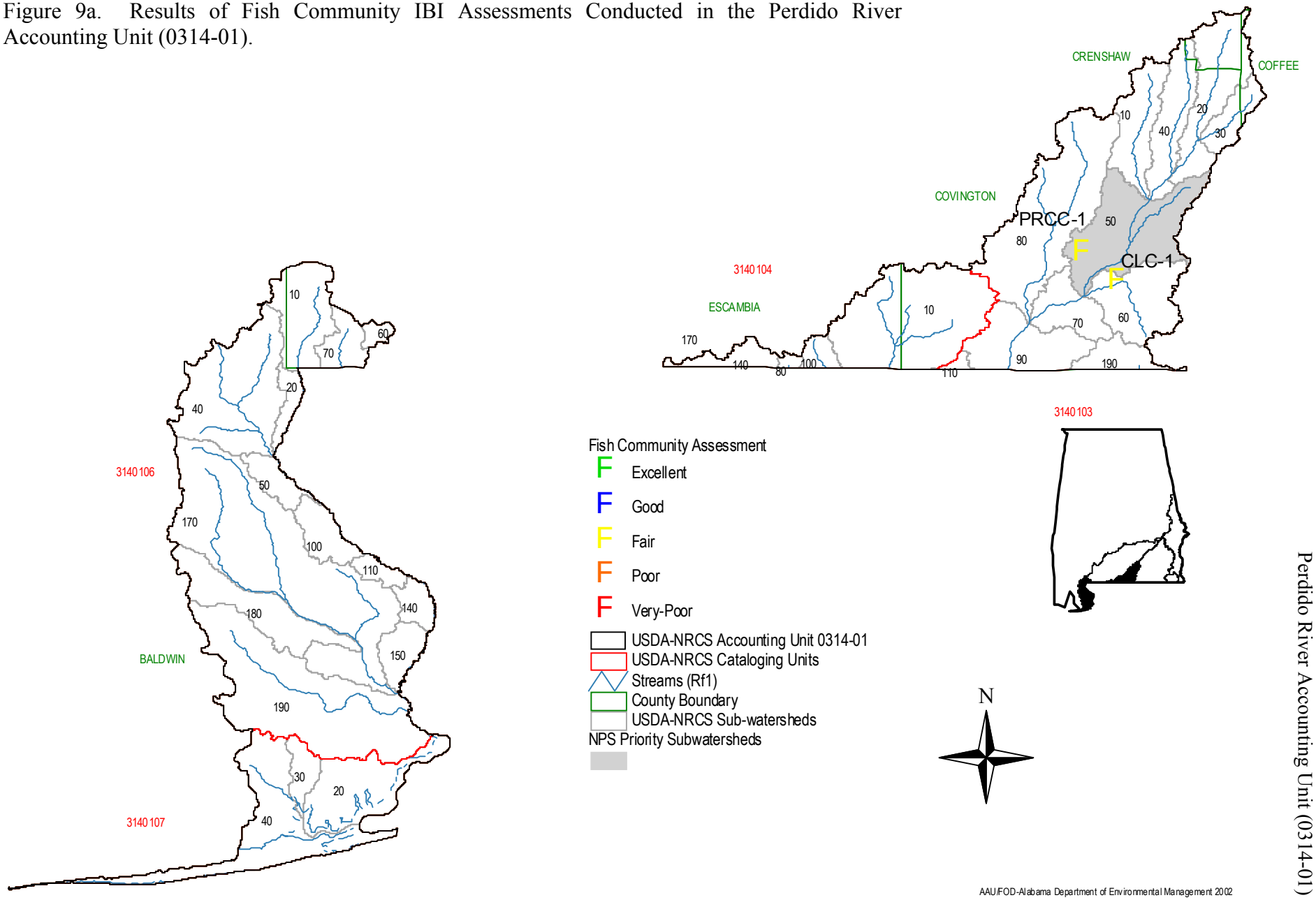

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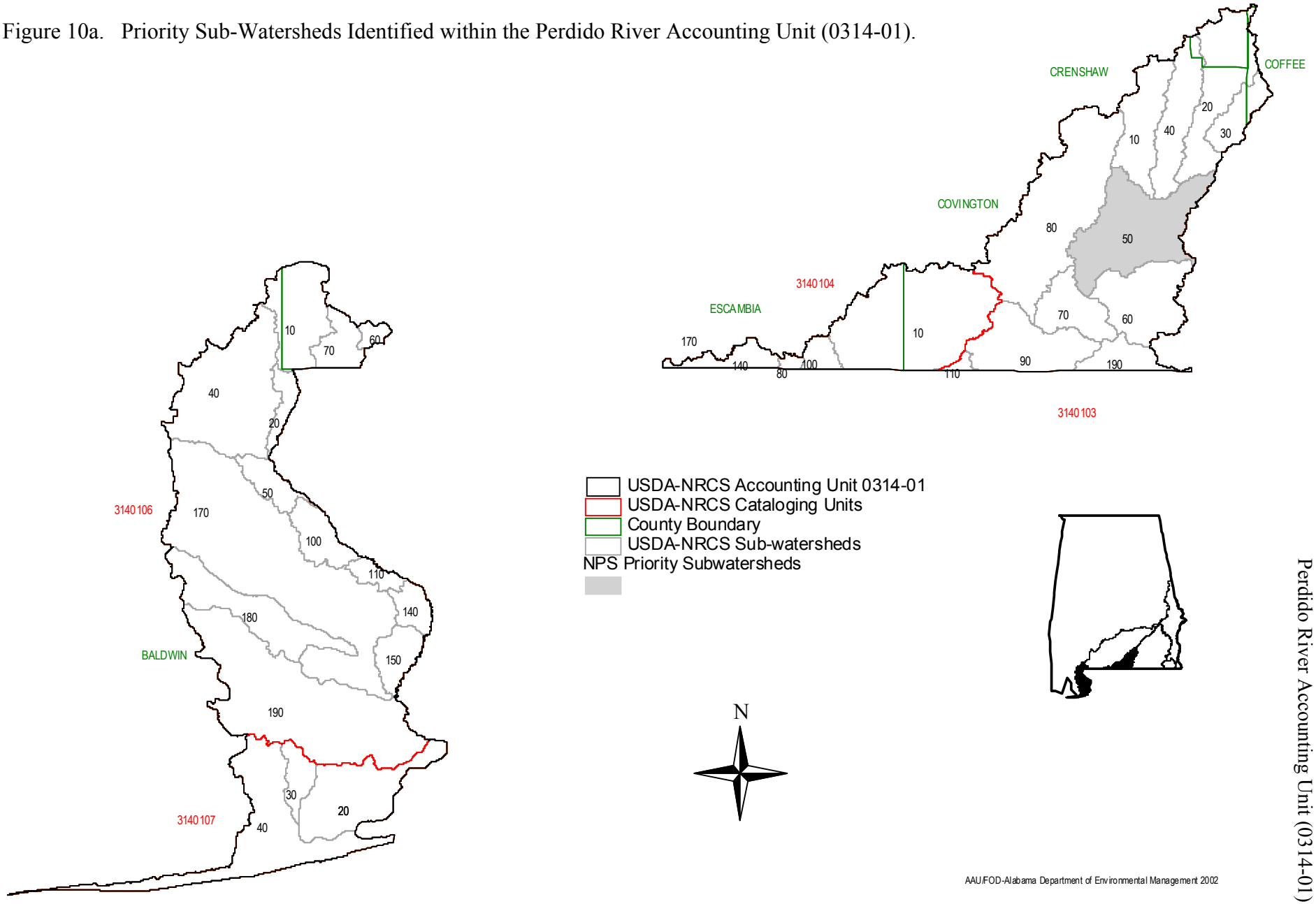
Figure 10a. Priority Sub-Watersheds Identified within the Perdido River Accounting Unit (0314-01).



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Yellow River CU (0314-0103) Summary

Land use: The Yellow River CU contains 11 sub-watersheds located primarily in a 507-mi^2 area of Covington, Coffee, and Crenshaw Counties (Fig. 1a). The CU is located within the Southern Pine Plains and Hills (65f) and Dougherty Plains (65g) subecoregions of the Southeastern Plains (65) Ecoregion (Fig. 2a). The primary land use was forest with some pasture and cropland. There are currently segments of 2 unnamed tributaries to Jackson Lake on ADEM's 2000 §303(d) list of impaired waterbodies (Table 11a). These segments were listed for impairment caused by organic enrichment and dissolved oxygen violations and pathogens (ADEM 2001c).

Percent land cover estimated by local SWCD (ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
72%	11%	12%	0%	3%	1%	1%

NPS impairment potential: Eight sub-watersheds were estimated to have a *moderate* potential for impairment from nonpoint sources. The main NPS concerns were animal husbandry and pasture runoff. Impairment from urban runoff and development was a concern within 3 sub-watersheds. The potential for impairment from all rural and urban NPS categories was *low* in the Clear Creek sub-watershed (060) (Table 5a).

Number of sub-watersheds with (M)oderate or (H)igh ratings for each NPS category (Table 5a).

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Moderate	8	5	2	2	6	0	1	2
High	0	2	0	0	1	0	0	0

Number of sub-watersheds with (M)oderate or (H)igh ratings for each point source category (Table 5a).

Category	% Urban	Development	Septic tank failure
Moderate	2	1	0
High	0	1	0

Historical data/studies: Assessments have been conducted recently in 5 sub-watersheds (Table 8a). These assessments were conducted as part of ADEM's Ecoregional Reference Site (Appendix F-1), §303(d) Monitoring Program (Appendix F-2), and ALAMAP (Appendix F-3) Programs. A summary of each of these studies, including lead agency, project objectives, data collected, and applicable quality assurance manuals with the appropriate appendices.

Assessments conducted during the SE Alabama NPS Screening Assessment: Poplar Creek, in the Yellow River sub-watershed, was assessed at one location during the SE Alabama NPS Screening Assessment (Table 10a).

Sub-watershed summaries: Historical monitoring data were used to provide a comprehensive assessment. A summary of the information available for all sub-watersheds is provided. Each summary discusses land use, NPS impairment potential, assessments conducted within the sub-watershed, and NPS priority rating based on available data. The summaries point out significant data and reference appropriate tables and appendices. Assessments of habitat, biological, and chemical conditions are based on long-term data from ADEM's Ecoregional Reference Site Program (ADEM 2000a). Tables referenced in the summaries are located at the end of Section I. Appendices are located at the end of the report.

Sub-watershed assessments: Habitat, chemical/physical, and biological indicators of water quality were monitored at 2 stations, in the Yellow River (050) and Clear Creek (060) sub-watersheds (Table 16b). Habitat quality was assessed as *excellent* at both stations (Table 6a). Results of the macroinvertebrate assessment indicated the macroinvertebrate community to be in *excellent* condition at 1 station (50%) and *fair* condition at 1 station (50%) (Table 7a). The fish community was assessed as *poor* at one station (Table 7a).

Overall condition was rated as the lowest assessment result obtained (Table 12a). One station was rated as *fair* and 1 station was rated as *poor*.

NPS priority sub-watersheds: A sub-watershed was recommended for NPS priority status if the macroinvertebrate or fish communities were assessed as *fair* or *poor*. Bioassessments indicated biological impairment within the Indian Creek (050) and Clear Creek (060) sub-watersheds (Table 12a). The Indian Creek sub-watershed was recommended for priority status (Table 13a). The cause of impairment to Clear Creek is unknown; the potential for impairment from all urban and rural NPS categories was rated as low. It is therefore recommended for further study.

Sub-Watershed: Yellow River	NRCS Sub-Watershed Number 010

Land use: Yellow River is a small sub-watershed (41 mi^2) located in the northeast corner of Covington County. SWCD estimates indicated land use to be mainly forest with some pasture and row crops (Table 2a). One current construction/stormwater authorization has been issued within the sub-watershed (Table 9a).

NPS impairment potential: The potential for NPS impairment from pasture runoff and activities associated with animal husbandry was estimated as *moderate* (Table 5a). Overall NPS impairment potential was *moderate*. The potential for impairment from urban development was also estimated to be *moderate* (Table 5a).

Assessments: No assessments were conducted within the sub-watershed.

Sub-Watershed: Lightwood Knot Creek	NRCS Sub-Watershed Number 020

Station	Assessment Type	Date	Location	Area (mi^2)	Class
EB06U2-29	C, H	1998	Pigpen Creek, approx., 2.8 mi. us of confluence with Lightwood Knot Creek	<1	F&W

Land use: The Lightwood Knot Creek sub-watershed drains approximately 57 mi^2 in Coffee, Covington, and Crenshaw Counties. SWCD estimated land use as 70% forest, 15% row crop, and 10% pasture (Table 2a). Three current construction/stormwater authorizations have been issued in the sub-watershed (Table 9a).

NPS impairment potential: Estimates of animal concentrations (0.29 AU/ac), primarily poultry-broilers, indicated a *high* impairment potential within the sub-watershed (Table 3a). Potential for impairment from forestry practices and pasture runoff was *moderate* (Table 5a). The overall potential for NPS impairment was *moderate* (Table 5a).

Assessments: No assessments were conducted during the NPS screening assessment. Pigpen Creek was assessed at EB06U2-29 during ADEM's 1998 ALAMAP Program (Appendix E-1). Chemical data are provided in Appendix F-3a. A habitat assessment could not be completed at this station because of low stream flow conditions. Other physical characteristics are presented in Appendix F-3b.

Sub-Watershed: Pond Creek	NRCS Sub-Watershed Number 030

Land use: The Pond Creek sub-watershed drains 20 mi^2 within Coffee and Covington Counties. Land use in this sub-watershed was estimated as 75% forest, 16% row crop, and 7% pasture (Table 2a). Two current construction/stormwater authorizations have been issued within the sub-watershed (Table 9a).

NPS impairment potential: Poultry and cattle were present in the sub-watershed and constituted a *moderate* source of potential for NPS impairment (0.15 AU/ac) (Table 3a). Estimates of sediment erosion were *moderate* (4.1 tons/ac/yr.). Row crops constituted a *moderate* source of potential impairment. Overall potential for NPS impairment was *moderate* (Table 5a).

Assessments: An assessment has not been conducted within the sub-watershed.

Sub-Watershed: Poley Creek	NRCS Sub-Watershed Number 040

Land use: The Poley Creek sub-watershed drains 41 mi^2 of Covington and Crenshaw Counties. Land use was estimated as 63% forest, 23% pasture, and 12% row crop (Table 2a). One current construction/stormwater authorization and 1 municipal NPDES permit have been issued in the sub-watershed (Table 9a).

NPS impairment potential: The primary NPS concerns within the sub-watershed were animal husbandry and pasture runoff (Table 5a). Cattle and poultry (broilers) were the predominant livestock within the sub-watershed (Table 3a). The overall potential for NPS impairment was estimated as *moderate* for the sub-watershed (Table 5a).

Assessments: No assessments were conducted within the sub-watershed.

Sub-Watershed: Yellow River	NRCS Sub-Watershed Number 050

Station	Assessment Type	Date	Location	Area (mi^2)	Class
INC-1	C	1999	Indian Creek at Covington CR 32	17	F&W
INC-2	C	1999	Indian Creek at Covington CR 97	13	F&W
INC-3	C	1999	Indian Creek at unnamed Covington CR north of Onycha	5	F&W
PRCC-1	C, H, M, F	1999	Poplar Creek at CR 45	8	F&W

Land use: The Yellow River sub-watershed drains 81 mi^2 in Covington County. SWCD land use estimates for this sub-watershed were 66% forest, 18% pasture, 10% row crops, and 3% urban (Table 2a). One current construction/stormwater authorization has been issued within the sub-watershed (Table 9a). Indian Creek was placed on the §303(d) list in 1985 due to low dissolved oxygen concentrations, nutrients, and organic enrichment caused by a point source discharge. The source of impairment was removed in 1988. Data from the 1999 investigation showed the creek to be fully supporting its water use classification (Appendix G).

NPS impairment potential: The main NPS concerns within the sub-watershed were animal husbandry, aquaculture, pasture runoff, and sedimentation. Overall potential for NPS impairment was estimated as *moderate.* (Table 5a)

Assessments: One station was assessed on Poplar Creek (PRCC-1) during the 1999 SE Alabama basins NPS screening assessments (Table 10a). Three stations were assessed on Indian Creek during 1999 to evaluate its non-support status and inclusion on ADEM's 1998 §303(d) list. These data are provided in Appendix F-2a. Station descriptions are provided in Appendix E-1.

Indian Creek: During 1999, intensive water quality sampling was conducted 4 times at 3 locations on Indian Creek (Appendix F-2). Low flows prevented sample collection at INC-2 and INC-3 on 3 occasions. Dissolved oxygen concentration was measured at 3.3 mg/L at INC-3 during June of 1999. Nutrient concentrations were similar to ADEM's ecoregional reference sites.

Poplar Creek: Poplar Creek is a small, low-gradient, sandy-bottomed stream located in subecoregion 65g (Table 6a). Habitat quality was estimated as *excellent* for this subecoregion (Table 6a). Eight EPT families were collected at the site, indicating that the macroinvertebrate community was in *fair* condition (Table 7a). The fish community was in *fair* condition (Table 7a). Water samples did not detect a cause of impairment (Appendices D-1 and D-2).

NPS priority status: Macroinvertebrate and fish assessments indicated biological impairment at Poplar Creek (Table 12a). The site was evaluated as *fair* (Table 12a) and was included on the priority sub-watershed list (Table 13a). SWCD land use estimates indicated animal husbandry, pasture runoff, and sedimentation to be NPS concerns within the sub-watershed.

Sub-Watershed: Clear Creek	**NRCS Sub-Watershed Number 060**

Station	Assessment Type	Date	Location	Area (mi^2)	Class
EB09U2-20	C, H	1998	Unnamed tributary to Dry Creek approx. 1.4 mi. us of confluence with Dry Creek		
CLC-1	C, H, M, F	1999	Clear Creek at unnamed Covington CR	33	F&W

Land use: The Clear Creek sub-watershed drains 51 mi^2 of Covington County. According to SWCD land use estimates, this sub-watershed consists mainly of forest (91%) with some pasture (4%) and row crops (4%) (Table 2a). No current construction/stormwater authorization or NPDES permits have been issued in the sub-watershed (Table 9a).

NPS impairment potential: Clear Creek was the only sub-watershed within the CU in which the potential for NPS impairment from all rural and urban categories was estimated as *low* (Table 5a). The overall potential for NPS impairment was estimated as *low* (Table 5a).

Assessments: Clear Creek at CLC-1 has been intensively monitored in conjunction ADEM's Ecoregional Reference Site Program since 1992. An unnamed tributary to Dry Creek was evaluated during ADEM's 1998 ALAMAP Program (Appendices F-3a and F-3b). Station descriptions are provided in Appendix E-1.

Clear Creek: Clear Creek is a sandy-bottomed, low-gradient stream located within the Dougherty Plains (65g) subecoregion (Table 6a). Habitat quality at CLC-1 is *excellent* for this stream type (Table 6a). The macroinvertebrate community is diverse, 16 EPT families were collected at the site during 1999, indicating the macroinvertebrate community to be in *excellent* condition (Table 7a). The fish community, which is generally more sensitive to habitat loss from sedimentation, was assessed as *poor* (Table 7a).

Intensive water quality data was collected 6 times during 1999 (Appendices F-1a and F-1b). Results did not indicate a cause of impairment to the fish community.

NPS priority status: Assessment of the fish community indicated biological impairment at CLC-1 (Table 12a). The cause of impairment is unknown. More data is needed to identify the source of impairment to the fish community.

Sub-Watershed: North Creek	**NRCS Sub-Watershed Number 070**

Land use: The North Creek sub-watershed drains 30 mi^2 of Covington County. SWCD land use estimates were 65% forest, 17% row crops, and 16% pasture (Table 2a). Two current construction/stormwater authorizations have been issued in the sub-watershed (Table 9a).

NPS impairment potential: There was a *moderate* potential for impairment from animal husbandry and runoff from crop and pasturelands (Table 5a). The overall potential for NPS impairment was *moderate*.

Assessments*:* No assessments were conducted within the sub-watershed.

Sub-Watershed: Five Runs Creek	NRCS Sub-Watershed Number 080

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
BYB-1	C	1999	Bay Branch @ unnamed CR off of Covington CR 36; approx. 1.8 mi. us of confluence with Five Runs Creek	12	F&W
BYB-2	C	1999	Bay Branch at Covington CR 56, approx. 5.6 mi. us of confluence with Five Runs Creek	4	F&W

Land use: Draining 122 mi^2 of Covington County, Five Runs Creek is the largest sub-watershed in the Yellow River CU. SWCD land use estimates for this sub-watershed were 72% forest, 12% row crops, 7% pasture, and 7% urban (Table 2a). Seven current construction/stormwater authorizations have been issued in the sub-watershed (Table 9a). One segment of Bay Branch was placed on ADEM's 1998 §303(d) list of impaired waterbodies. An intensive study conducted in 1999 indicated the segment to be fully supporting its water use classification of Fish and Wildlife (Appendix F-2). Subsequently, the segment has been removed from Alabama's 2000 §303(d) list (see Appendix G).

NPS impairment potential: Estimates of potential impairment for all rural NPS categories was *low* (Table 5a). Potential for impairment from urban runoff and development was *moderate* and *high*, respectively (Table 5a).

Assessments: Two sites were assessed on Bay Branch during 1999 to verify the stream's non-support status and inclusion on the §303(d) list. These data are provided in Appendix F-2. Station descriptions are provided in Appendix E-1.

Sub-Watershed: Yellow River	NRCS Sub-Watershed Number 090

Land use: The Yellow River sub-watershed drains 49 mi^2 of Covington County. Land use was estimated as 68% forest, 18% pasture, and 13% row crop (Table 2a). One current construction/stormwater authorization and 1 municipal NPDES permit have been issued in this sub-watershed (Table 9a).

NPS impairment potential: There was a *moderate* potential for impairment from nonpoint sources (Table 5a). The main NPS concerns were animal husbandry and pasture runoff.

Assessments: No assessments have been conducted within the sub-watershed.

Sub-Watershed: Big Horse Creek	NRCS Sub-Watershed Number 110

Land use: Covington County, Alabama contains 3 mi^2 of the headwaters of Big Horse Creek before it flows into Florida. Although this area is too small to evaluate in Alabama, land use information is provided to assist with any watershed assessments that may be conducted in Florida. The local SWCD did not estimate percent land use within this sub-watershed. USEPA estimated percent land use as 72% forest, 15% pasture, and 9% row crop (Appendix A-1). One current construction/stormwater authorization has been issued in the sub-watershed (Table 9a).

NPS impairment potential: Estimates of animal concentrations and rates of sediment erosion were not determined by the SWCD in 1998 for this sub-watershed.

Assessments*:* No assessments have been conducted within the sub-watershed.

Sub-Watershed: Horsehead Creek	NRCS Sub-Watershed Number 190

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
EB07A3-42	C, H	1999	Unnamed tributary to Horsehead Creek approx. 1/8 mi. south of Covington CR 6		F&W

Land use: Covington County, Alabama contains 19 mi^2 of the headwaters of Horsehead Creek. The remainder of the sub-watershed is located in Florida. Land use within the Alabama portion of the sub-watershed was estimated as 64% forest, 12% row crops, 12% pasture, and 6% urban (Table 2a). One current construction/stormwater authorization has been issued in the sub-watershed (Table 9a).

NPS impairment potential: Aquaculture and pasture runoff were the main NPS concerns (Table 5a). The overall potential for impairment was *moderate*. The potential for impairment from urban runoff was also *moderate* (Table 5a).

Assessments: An assessment was not conducted within the sub-watershed during the SE Alabama NPS screening assessment. An unnamed tributary to Horsehead Creek was evaluated in 1999 during ADEM's ALAMAP Program. These data are provided in Appendices F-3a and F-3b. A complete station description is located in Appendix E-1.

Blackwater River CU (0314-0104) Summary

Land use: Land cover within the Blackwater River CU was primarily forest with some cropland and pastures. The 6 sub-watersheds located within the CU drain 148 mi^2 of Covington and Escambia Counties (Fig. 1a). Five of these sub-watersheds are primarily located in Florida.

Percent land cover estimated by local SWCD (ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
80%	10%	7%	0%	0%	1%	1%

NPS impairment potential: The SWCD did not complete Conservation Assessment Worksheets for the 3 sub-watersheds with drainage areas <5 mi^2. The potential for impairment from all nonpoint sources categories was *low* within the remaining 3 sub-watersheds (Table 5a).

Number of sub-watersheds with (M)oderate or (H)igh ratings for each NPS category (Table 5a).

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Moderate	0	0	0	0	1	0	0	0
High	0	0	0	0	0	0	0	0

Number of sub-watersheds with (M)oderate or (H)igh ratings for each point source category (Table 5a).

Category	% Urban	Development	Septic tank failure
Moderate	0	0	0
High	0	0	0

Historical data/studies: Bear Creek (BRE-1), located in sub-watershed (010), has been sampled by ADEM since 1991 as a least-impaired ecoregional reference site for streams located in the Southern Pine Plains and Hills Subecoregion (65f). Ecoregional reference sites represent the best attainable water quality within the subecoregion and are used by ADEM to characterize least-impaired biological, habitat, and chemical reference conditions that are then used to assess study stations.

Assessments conducted during the SE Alabama NPS Screening Assessment: An assessment was not conducted within the Blackwater CU during the SE Alabama NPS Screening Assessment.

Sub-watershed summaries: A summary of the information available for each sub-watershed is provided. Each summary discusses land use, NPS impairment potential, assessments conducted within the sub-watershed, and NPS priority rating based on available data. The summaries point out significant data and reference appropriate tables and appendices. Assessments of habitat, biological, and chemical conditions are based on long-term data from ADEM's Ecoregional Reference Site Program. Tables referenced in the summaries are located at the end of Section I. Appendices are located at the end of the report.

Sub-watershed assessments: Habitat, chemical/physical, and biological indicators of water quality were monitored at BRE-1 in the Blackwater River (010) sub-watershed. Habitat quality was assessed as *excellent* (Table 6a). Results of the macroinvertebrate assessment indicated the macroinvertebrate community to be in *good* condition (Table 7a). The overall condition of BRE-1 was rated as *good* (Table 12a).

NPS priority sub-watersheds: A sub-watershed was recommended for NPS priority status if the macroinvertebrate or fish communities were assessed as *fair* or *poor*. The bioassessment conducted at BRE-1 did not indicate biological impairment (Table 12a).

Sub-Watershed: Blackwater River	NRCS Sub-Watershed Number 010

Station	Assessment Type	Date	Location	Area (mi^2)	Classification
BRE-1	H, C, M	1999	Bear Creek at Escambia CR 51	27	F&W

Land use: The Blackwater River sub-watershed is located in both Alabama and Florida. Within Alabama, the sub-watershed drains 121 mi^2 of Covington and Escambia Counties. According to SWCD land use estimates, this sub-watershed is mainly forest with some row crops and pasturelands (Table 2a). Two current construction/stormwater authorizations have been issued in the sub-watershed (Table 9a).

NPS impairment potential: There was a *moderate* potential for impairment from pastureland (Table 5a). The potential for impairment from all other NPS categories was *low* (Table 5a).

Assessments: Bear Creek at BRE-1 has been monitored intensively as an ecoregional reference site for streams located within the Southern Pine Plains and Hills (65f) subecoregion. A complete station description is provided in Appendix E-1.

Bear Creek: Bear Creek at BRE-1 is a low-gradient, sand-bottomed stream reach characterized by deep pools separated by shallower runs (Table 6a). Habitat quality is *excellent* for this subecoregion (Table 6a). Ten EPT families were collected indicating a *good* aquatic macroinvertebrate community (Table 7a). Results of chemical assessments are provided in Appendix F-1a.

Sub-Watershed: Panther Creek	NRCS Sub-Watershed Number 040

Land use: The Panther Creek sub-watershed flows through Alabama and Florida. Within Alabama, the sub-watershed drains <1 mi^2 of Covington County before it enters Florida. No land use data were collected by the local SWCD. However, EPA data were available and are provided to assist with any watershed assessments that may be conducted in Florida. EPA land use estimates indicated 44% row crop, 38% pasture, and 18% forest for this sub-watershed (Appendix A-1). Two current construction/stormwater authorizations have been issued in the sub-watershed (Table 9a).

NPS impairment potential: Conservation assessment worksheets were not completed for this sub-watershed.

Assessments: No recent assessment information has been collected within this sub-watershed.

Sub-Watershed: Big Juniper Creek	NRCS Sub-Watershed Number 080

Land use: The headwaters of Big Juniper Creek drain 3 mi^2 of Escambia County before entering Florida. No land use data were collected by the local SWCD because of the small size of the sub-watershed. However, EPA land use information is provided to assist with any watershed assessments that may be conducted in Florida. Percent land use was estimated as 81% forest, 11% row crop, 4% pasture, and 4% other grasses (Appendix A-1). One current construction/stormwater authorization has been issued in the sub-watershed (Table 9a).

NPS Impairment potential: No NPS impairment data were collected by the local SWCD.

Assessments*:* No assessments have been conducted within the Alabama portion of this sub-watershed.

Sub-Watershed: Sweetwater Creek	NRCS Sub-Watershed Number 100

Land use: Escambia County, Alabama contains 9 mi^2 of the headwaters of Sweetwater Creek before it enters Florida. In the Alabama portion of the sub-watershed, SWCD percent land use estimates indicate 91% forest, 4% row crop, 3% open water (Table 2a). One current construction/stormwater authorization has been issued (Table 9a).

NPS impairment potential: The potential for impairment from all NPS categories was *low* (Table 5a).

Assessments: No assessments have been conducted within the Alabama portion of this sub-watershed.

Sub-Watershed: East Fork Big Coldwater Creek	NRCS Sub-Watershed Number 140

Land use: The headwaters of East Fork Big Coldwater Creek drain 14 mi^2 of Escambia County, Alabama before flowing into Florida. Land use information for the Alabama portion of the sub-watershed is provided to assist with any watershed assessments that may be conducted in Florida. SWCD estimated land use as 90% forest, 8% row crop, and 2% pasture (Table 2a). One current construction/stormwater authorization has been issued within the sub-watershed (Table 9a).

NPS impairment potential: The potential for impairment from all NPS categories was *low* (Table 5a).

Assessments: No data has been collected within the sub-watershed.

Sub-Watershed: West Fork Big Coldwater Creek	NRCS Sub-Watershed Number 170

Land use: Escambia County, Alabama contains <1 mi^2 of the headwaters of West Fork of Big Coldwater Creek before it flows into Florida. EPA estimated percent land use was 68% row crop, 21% forest, and 10% pasture (Appendix A-1). One current stormwater/construction authorization has been issued in the sub-watershed (Table 9a).

NPS impairment potential: Conservation assessment worksheets were not completed.

Assessments: No assessments have been conducted within the sub-watershed.

Perdido River CU (0314-0106) Summary

Land use: The Perdido River CU contains 13 sub-watersheds that drain 670 mi^2 of Baldwin and Escambia Counties (Fig. 1a). The CU is located primarily within the Southern Pine Plains and Hills Subecoregion (65f) of the Southeastern Plains (Fig. 2a). A small portion of the CU is located in the Gulf Coast Flatwoods Subecoregion (75a) of the Southern Coastal Plain Ecoregion. Land use within the CU was estimated to be mainly forest with some cropland.

Three stream segments, Boggy Branch (070), Brushy Creek (070), and Blackwater River (190), were listed on ADEM's 1998 §303(d) list of impaired streams. Blackwater River (190), which was included on the 1998 §303(d) list because of *high* metals concentrations (Cu, Pb, Zn) detected in samples taken at a USGS station, has been removed from the 2000 list, since metal concentrations have been shown to be the result of natural conditions (Appendix G). Three sites were monitored in the Brushy Creek sub-watershed (070) during 1999 (Appendix F-2). Analytical results indicating organic enrichment and low dissolved oxygen levels supported the inclusion of this stream segment on the final 2000 §303(d) list (Appendix G).

Percent land cover estimated by local SWCD (ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
73%	16%	3%	0%	5%	0%	3%

NPS impairment potential: Eleven sub-watersheds were estimated to have a *moderate* potential for impairment from nonpoint sources. The main NPS concerns were cropland, sedimentation, forestry, and mining. Urban runoff and development were concerns in 7 sub-watersheds (Table 5a).

Number of sub-watersheds with (M)oderate or (H)igh ratings for each NPS category (Table 5a).

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Moderate	11	0	0	4	0	2	1	3
High	0	0	0	0	0	0	9	0

Number of sub-watersheds with (M)oderate or (H)igh ratings for each point source category (Table 5a).

Category	% Urban	Development	Septic tank failure
Moderate	4	4	0
High	1	1	0

Historical data/studies: Assessments have been conducted recently within 5 sub-watersheds (Table 8a). These assessments were conducted in conjunction with ADEM's §303(d) Monitoring Program (F-2), ALAMAP Program (F-3), and Clean Water Strategy Project (F-4). A summary of each of these studies is provided in the appendices.

Assessments conducted during the SE Alabama NPS Screening Assessment: An assessment was not were conducted during the NPS screening assessment of the southeast Alabama basins.

Sub-watershed summaries: A summary of available information for all sub-watersheds is provided. Each summary discusses land use, NPS impairment potential, assessments conducted within the sub-watershed, and NPS priority rating based on available data. The summaries point out significant data and reference appropriate tables and appendices. Assessments of habitat, biological, and chemical conditions are based on long-term data from ADEM's Ecoregional

Reference Site Program (ADEM 2000a). Tables referenced in the summaries are located at the end of Section I. Appendices are located at the end of the report.

Sub-watershed assessments: Habitat, chemical/physical, and biological indicators of water quality were monitored at 1 station in the Brushy Creek (070) sub-watershed (Table 12a). Habitat quality was assessed as *excellent* (Table 6a). Results of the macroinvertebrate assessment indicated the macroinvertebrate community to be in *poor* condition (Table 7a).

Overall condition, rated as the lowest assessment result obtained, was assessed as *poor* (Table 12a).

NPS Priority Sub-watersheds: The macroinvertebrate community at BRU-2 was assessed as *poor* (Table 12a). However, the site was primarily impaired by urban sources and was not recommended for NPS priority status.

Sub-Watershed: Perdido River	NRCS Sub-Watershed Number 010

Land use: Most of the Perdido River sub-watershed (42 mi^2) is located in Baldwin and Escambia Counties. SWCD estimated land use in this sub-watershed as 70% forest, 22% row crops, and 3% pasture (Table 2a). Four current construction/stormwater authorizations have been issued in the sub-watershed (Table 9a).

NPS impairment potential: There was a *moderate* potential for impairment from cropland runoff and mining. The overall potential for NPS impairment was *moderate* (Table 5a). There was a *moderate* potential for impairment from urban development.

Assessments: An assessment has not been conducted within the sub-watershed.

Sub-Watershed: Perdido River	NRCS Sub-Watershed Number 020

Land use: The Perdido River sub-watershed drains 11 mi^2 in Baldwin County. The local SWCD estimated land use as 85% forest, 9% row crops, and 5% pasture (Table 2a). Two current construction/stormwater authorizations have been issued within the sub-watershed (Table 9a).

NPS impairment potential: Potential for NPS impairment from silvicultural practices was *high* (Tables 4a and 5a). The overall potential for NPS impairment was therefore estimated as *moderate* (Table 5a).

Assessments: No assessments have been conducted within this sub-watershed.

Sub-Watershed: Dyas Creek	NRCS Sub-Watershed Number 040

Land use: Dyas Creek drains 97 mi^2 of Baldwin County. Land use was estimated as 73% forest, 14% row crop, and 7% urban (Table 2a). Three mining NPDES permits and 4 current construction/stormwater authorizations have been issued within the sub-watershed (Table 9a).

NPS impairment potential: The overall potential for NPS impairment was estimated as *moderate* due to the *high* potential for impairment from silvicultural practices (Table 5a).

Assessments: No assessments have been conducted within this sub-watershed.

Sub-Watershed: Indian Creek	NRCS Sub-Watershed Number 050

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
PE01U2-12	C, H	1998	Unnamed tributary to Indian Creek approx. 2.4 mi. us of confluence with Indian Creek and Perdido River	<1	F&W

Land use: Indian Creek drains 16 mi^2 of Baldwin County. Land use was estimated as 92% forest (Table 2a). Two current construction/stormwater authorizations have been issued within the sub-watershed (Table 9a).

NPS impairment potential: The potential for NPS impairment from silvicultural sources was estimated as *high* (Table 5a). The overall potential for impairment was *moderate* (Table 5a).

Assessments: One station was assessed on an unnamed tributary to Indian Creek in 1998 as part of ADEM's ALAMAP Program (Appendix E-1). Analyses of physical/chemical data did not indicate impairment (Appendix F-3a). Habitat quality was assessed as *excellent* (Appendix F-3b).

Sub-Watershed: Upper Brushy Creek	**NRCS Sub-Watershed Number 060**

Land use: Upper Brushy Creek drains 5 mi^2 in Escambia County. EPA's percent land use estimates showed 36% pasture, 30% row crop, 20% forest, and 11% urban (Table 2a). One current construction/stormwater authorization has been issued within the sub-watershed (Table 9a).

NPS impairment potential: Animal concentrations, and rates of soil erosion were not estimated by SWCD due to the small size of the sub-watershed.

Assessments: No assessments have been conducted within this sub-watershed.

Sub-Watershed: Brushy Creek	**NRCS Sub-Watershed Number 070**

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
BRU-1	C	1999	Brushy Creek at Deere Creek Rd.	14	F & W
BRU-2	C, H, M	1999	Brushy Creek at US Hwy 31	17	F & W
BRU-3	C	1999	Brushy Creek at Escambia CR 1	5	F & W

Land use: Brushy Creek has a drainage area of 19 mi^2 (Escambia County). Land use was estimated as 34% forest, 33% urban, 27% row crops, and 4% wetlands (Table 2a). One mining, 1 municipal, and 4 industrial NPDES permits, and two current construction/stormwater authorizations have been issued within the sub-watershed (Table 9a). A 0.2 mi. segment of Boggy Branch and a 0.2 mi. segment of Brushy Creek are on ADEM's 2000 §303(d) list for only partially supporting their Fish and Wildlife water use classification (Table 11a).

NPS impairment potential: Potential for NPS impairment from cropland runoff was estimated as *moderate* (Table 5a). The overall potential for NPS impairment was *low* (Table 5a). The potential for impairment from urban runoff was *high* (Table 5a).

Assessments: Brushy Creek was monitored at 3 stations in conjunction with ADEM's §303(d) stream monitoring program (Appendix F-2). Complete station descriptions are provided in Appendix E-1.

Brushy Creek: At BRU-2, Brushy Creek is a low-gradient stream reach characterized by deep pools separated by shallower runs. The bottom substrate composition was dominated by sand, although some gravel was present (Table 6a). Habitat quality was *excellent* for this subecoregion (Table 6a). Only 3 EPT families were collected at this site, indicating the aquatic macroinvertebrate community was in *poor* condition (Table 7a).

Water quality was monitored at BRU-1, BRU-2, and BRU-3 during 4 sampling events (Appendix F-2). Dissolved oxygen concentrations at BRU-3, the upstream location, ranged from 0.6 mg/L in June and September of 1999 to 2.6 mg/L in May of 1999. Samples also indicated potential nutrient enrichment at all 3 sites.

NPS priority status: The macroinvertebrate community at BRU-2 was assessed as impaired. Water quality assessments conducted at the site suggested possible nutrient enrichment. These data

support the inclusion of Boggy Branch and Brushy Creek on ADEM's 2000 §303(d) list of impaired waterbodies. The impairment is most likely caused by urban sources.

Sub-Watershed: Nelson Branch	NRCS Sub-Watershed Number 100

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
PE02U2-11	C, H	1998	Unnamed tributary to Perdido River approx. 3.2 mi. us of confluence with Perdido River		F&W

Land use: The Nelson Branch sub-watershed drains 22 mi^2 of Baldwin County. The SWCD estimated land use as 89% forest, 8% row crops, and 2% pasture (Table 2a). Two current construction/stormwater authorizations have been issued within the sub-watershed (Table 9a).

NPS impairment potential: The potential for NPS impairment associated with silvicultural activities was estimated as *high* (Table 4a). The overall potential for NPS impairment was *moderate* (Table 5a).

Assessments: An unnamed tributary to Perdido River was sampled in conjunction with ADEM's 1998 ALAMAP program (Appendices F-3a and F-3b). A complete station description is provided in Appendix E-1.

Sub-Watershed: Loggerhead Creek	NRCS Sub-Watershed Number 110

Land use: Loggerhead Creek drains 9 mi^2 of Baldwin County. SWCD estimated land use as primarily forest (95%) with some row crops (5%) (Table 2a). Two current construction/stormwater authorizations have been issued within the sub-watershed (Table 9a).

NPS impairment potential: Forestry activities constituted a *high* potential source of NPS impairment (Table 4a). The overall potential for NPS impairment was estimated as *moderate* (Table 5a).

Assessments: No assessments have been conducted within this small sub-watershed.

Sub-Watershed: Perdido River	NRCS Sub-Watershed Number 140

Land use: Perdido River drains 13 mi^2 of Baldwin County. SWCD land use estimates for this sub-watershed were 75% forest, 17% row crops, 4% pasture, and 4% wetlands (Table 2a). Four current stormwater/construction authorizations and 1 semi-public/ private NPDES permit have been issued within the sub-watershed (Table 9a).

NPS impairment potential: The potential for NPS impairment from sedimentation and runoff from cropland was *moderate* (Table 5a). The potential for impairment from silvicultural sources was *high* (Table 4a). The overall potential for NPS impairment was estimated as *moderate* (Table 5a). The potential for impairment from urban development was *moderate* (Table 5a).

Assessments: No assessments have been conducted within this sub-watershed.

Sub-Watershed: Rices Branch	NRCS Sub-Watershed Number 150

Land use: The Rices Branch sub-watershed has a 19-mi^2 drainage area (Baldwin County). SWCD estimated land use to be 86% forest, 8% row crops, 3% wetlands, and 2% urban (Table 2a). Two current construction/stormwater authorizations have been issued within the sub-watershed (Table 9a).

NPS impairment potential: Impairment potential from animal sources and sedimentation were *low* (Tables 3a and 4a). Potential for impairment from silviculture was *high* (Table 4a). Overall potential for impairment was *moderate* (Table 5a).

Assessments: No assessments have been conducted within the sub-watershed.

Sub-Watershed: Styx River	NRCS Sub-Watershed Number 170

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
PE02U4-23	C, H	2000	Hollinger Creek approx. 0.5 mi. SW of AL Hwy 112 and 4 RM ds of Bay Minette		F&W

Land use: The Styx River sub-watershed drains 205 mi^2 of Baldwin County. SWCD land use estimates indicated primarily forest (87%), with some cropland (5%), urban areas (4%), and pasture (3%) (Table 2a). One mining, 1 municipal, and 5 industrial NPDES permits, and two current construction/stormwater authorizations have been issued within the sub-watershed (Table 9a).

NPS impairment potential: There was a *high* potential for NPS impairment from silvicultural practices (Table 4a). The overall potential for NPS impairment was *moderate* (Table 5a).

Assessments: No assessments have been conducted within this sub-watershed within the last 5 years.

Sub-Watershed: Cowpen Creek	NRCS Sub-Watershed Number 180

Land use: Cowpen Creek drains 52 mi^2 of Baldwin County. SWCD estimated land use for this sub-watershed as 70% forest, 15% row crops, 5% pasture, 5% wetlands, and 5% urban (Table 2a). Four current construction/stormwater authorizations and 1 semi-public/ private NPDES permit have been issued within the sub-watershed (Table 9a).

NPS impairment potential: The main NPS concerns within the sub-watershed were silviculture, mining, and sedimentation (Table 5a). The overall potential for NPS impairment was *moderate* (Table 5a). The was a moderate potential for impairment from urban runoff and development (Table 5a).

Assessments: No assessments have been conducted within this sub-watershed.

Sub-Watershed: Blackwater River	NRCS Sub-Watershed Number 190

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
PE1U4-7	C, H	2000	Caney Bayou approx. 1/8 mi. upstream of confluence with Perdido River		F&W
PE01	C	1996	Rock Creek us of Robertsdale STP		F&W
PE02	C	1996	Rock Creek us of Baldwin CR 52		F&W
PE03	C	1996	Rock Creek us of mouth		F&W

Land use: This segment of the Blackwater River drains 159 mi^2 of Baldwin County. Land use within the sub-watershed was mainly forest and row crops. Seventeen current construction/stormwater authorizations, and two mining and 2 municipal NPDES permits and have been issued within the sub-watershed (Table 9a). The Blackwater River was on the 1998 §303(d) list due to impairment caused by metals (Cu, Pb, Zn) (Table 11a). However, since metal concentrations have been shown to be the result of natural conditions, Blackwater River has been removed from the 2000 list (Appendix G).

NPS impairment potential: The potentials for impairment from row crops and forestry land use were *moderate* (Table 5a). Impairment potential from soil erosion was *moderate* (Table 4a). The overall potential for NPS impairment was estimated as *moderate* (Table 5a).

Assessments: One site was evaluated on Caney Bayou during ADEM's 2000 ALAMAP Program. Chemical data is provided in Appendix F-3a. The site was not wadeable and a habitat assessment was not conducted. Rock Creek was evaluated at 3 locations during ADEM's 1996 Clean Water Strategy Project (Appendix F-4a). Complete station descriptions are listed in Appendix E-1.

Perdido Bay CU (0314-0107) Summary

Land use: The Perdido Bay CU contains 3 sub-watersheds that drain 171 mi^2 of Baldwin County (Fig. 1a). The CU contains portions of the Dougherty Plains (65g), Gulf Coast Flatwoods (75a), and the Gulf Barrier Islands and Coastal Marshes (75k) subecoregions (Fig. 2a). Land use was primarily forest mixed with some urban areas, cropland, and open water.

Percent land cover estimated by local SWCD (ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
52%	15%	3%	0%	16%	9%	5%

NPS impairment potential: All 3 sub-watersheds located in the CU were estimated to have a *moderate* potential for impairment from nonpoint sources. The main NPS concerns were forestry, sedimentation, and croplands. Impairment from urban and runoff were also a concern within the 3 sub-watersheds (Table 5a).

Number of sub-watersheds with (M)oderate or (H)igh ratings for each NPS category (Table 5a).

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Moderate	3	0	0	2	0	1	3	3
High	0	0	0	0	0	0	0	0

Number of sub-watersheds with (M)oderate or (H)igh ratings for each point source category (Table 5a).

Category	% Urban	Development	Septic tank failure
Moderate	2	1	0
High	1	2	0

Historical data/studies: No studies have been conducted within the CU within the last 5 years.
Assessments conducted during the SE Alabama NPS Screening Assessment: An assessment was not conducted within the CU during this study.

Sub-watershed summaries: A summary of the information available for each sub-watershed is provided. They discuss land use and NPS impairment potential. Tables referenced in the summaries are located at the end of Section I. Appendices are located at the end of the report.

Sub-watershed assessments: Habitat, chemical/physical, and biological indicators of water quality were not monitored at any stations within the CU.

NPS Priority Sub-watersheds: A NPS priority sub-watershed was not identified within the CU.

Sub-Watershed: Soldier Creek	NRCS Sub-Watershed Number 020

Land use: Soldier Creek drains approximately 59-mi^2 of Baldwin County. Land use within the sub-watershed was primarily forest, row crops, and open water (Table 2a). Two NPDES permits and 15 current construction/stormwater authorizations have been issued within the sub-watershed (Table 9a).

NPS impairment potential: The primary NPS concerns within the sub-watershed were sedimentation and runoff from cropland and silvicultural areas (Table 5a). The overall potential for impairment was *moderate*. There was a *moderate* and *high* potential for impairment from urban runoff and development (Table 5a).

Assessments: No recent assessments have been conducted within this sub-watershed.

Sub-Watershed: Miflin Creek	NRCS Sub-Watershed Number 030

Land use: This segment of Miflin Creek drains 15 mi^2 of Baldwin County. SWCD estimated land use in this sub-watershed as 56% forest, 22% row crops, 11% urban, 8% pasture, and 4% wetlands (Table 2a). Three current construction/stormwater authorizations have been issued within the sub-watershed (Table 9a).

NPS impairment potential: The primary NPS concerns within the sub-watershed were sedimentation and runoff from cropland and silvicultural areas (Table 5a). The overall potential for impairment was *moderate*. There was a *moderate* potential for impairment from urban runoff and development (Table 5a).

Assessments: No assessment was conducted within this sub-watershed.

Sub-Watershed: Wolf Creek	NRCS Sub-Watershed Number 040

Land use: Wolf Creek drains 98 mi^2 of Baldwin County. SWCD estimated land use as 53% forest, 22% urban, 10% row crops, 6% wetlands, and 7% open water (Table 2a). Six NPDES permits and 56 current construction/stormwater authorizations have been issued within the sub-watershed (Table 9a).

NPS impairment potential: The overall potential for NPS impairment was *moderate* (Table 5a). The primary nonpoint sources within the sub-watershed were estimated to be mining, silviculture, and sedimentation (Table 5a).

Assessments: No assessment was conducted within this sub-watershed due to the prevalence of urban land.

Table 2a. Land use percentages for Yellow River (0314-0103), Blackwater River (0314-0104), and Perdido River (0314-0106) cataloging units from EPA landuse categories (EPA 1997) and local SWCD Conservation Assessment Worksheet landuse estimates (ASWCC 1998).

Subwatershed	Percent Total Landuse													
	Open Water		Urban		Mines		Forest		Pasture		Row Crops		Other	
	SWCD	EPA	SWCD	EPA	SWCD	EPA	SWCD	EPA	SWCD	EPA	SWCD	EPA	SWCD	EPA
Yellow River (0314-0103)														
010	1	<1	0	<1	0	<1	73	62	13	10	12	23	1	4
020	3	3	1	1	0	<1	70	61	10	10	15	21	2	4
030	<1	1	0	<1	0	<1	75	46	7	15	16	33	1	5
040	1	<1	<1	<1	0	<1	63	57	23	13	12	24	1	6
050	2	<1	3	1	0	<1	66	68	18	12	10	14	1	4
060	<1	<1	0	<1	0	<1	91	92	4	3	4	3	1	2
070	<1	<1	0	<1	0	<1	65	81	16	8	17	7	1	5
080	<1	<1	7	1	0	<1	72	68	7	11	12	12	2	7
090	<1	<1	0	<1	0	<1	68	71	18	9	13	12	1	7
110	---	2	---	<1	---	<1	---	72	---	15	---	9	---	2
190	4	2	6	3	0	1	64	61	12	14	12	16	2	3
Blackwater River (0314-0104)														
010	1	<1	<1	<1	<1	<1	78	90	9	5	11	4	1	1
040	---	<1	---	<1	---	<1	---	18	---	38	---	44	---	<1
080	---	<1	---	<1	---	<1	---	81	---	4	---	11	---	4
100	3	3	0	<1	0	<1	91	88	0	3	4	4	1	2
140	0	<1	0	<1	0	<1	90	87	2	4	8	9	1	<1
170	---	<1	---	<1	---	<1	---	21	---	10	---	68	---	<1
Perdido River (0314-0106)														
010	0	<1	2	<1	<1	<1	70	54	3	17	22	24	3	3
020	0	<1	0	<1	0	<1	85	71	5	9	9	8	1	12
040	0	<1	7	<1	0	<1	73	84	2	6	14	5	3	4
050	<1	<1	0	<1	0	<1	92	85	2	1	4	1	1	13
060	---	<1	---	11	---	<1	---	20	---	36	---	30	---	3
070	0	<1	33	2	0	<1	34	47	3	26	27	20	4	4

Table 2a, cont. Land use percentages for the Perdido River (0314-0106) and Perdido Bay (0314-0107) cataloging units from EPA landuse categories (EPA 1997) and local SWCD Conservation Assessment Worksheet landuse estimates (ASWCC 1998).

Subwatershed	Percent Total Landuse															
	Open Water		Urban		Mines		Forest		Pasture		Row Crops		Other	
	SWCD	EPA	SWCD	EPA	SWCD	EPA	SWCD	EPA	SWCD	EPA	SWCD	EPA	SWCD	EPA
Perdido River (0314-0106)																
100	0	<1	0	<1	0	<1	89	87	2	4	8	2	1	7
110	0	<1	0	<1	0	<1	95	88	0	3	5	2	<1	7
140	0	<1	1	<1	0	<1	75	85	4	5	17	4	4	7
150	0	1	2	<1	<1	<1	86	75	0	5	8	2	3	16
170	0	<1	4	<1	<1	<1	87	81	3	7	5	5	2	6
180	0	1	5	1	<1	<1	70	61	5	15	15	15	5	7
190	0	1	4	<1	0	<1	55	32	5	34	33	17	3	16
Perdido Bay (0314-0107)																
020	16	27	7	<1	<1	2	50	30	4	22	21	8	3	10
030	0	4	11	1	<1	<1	56	21	8	45	22	9	4	20
040	7	17	22	4	<1	6	53	32	1	17	10	7	6	17

Table 3a. Estimates of animal concentrations, animal units (AU), percent aquaculture, and percent of acres where pesticides/herbicides applied in the Yellow River (0314-0103), Blackwater River (0314-0104), Perdido River (0314-0106), and Perdido Bay (0314-0107) CUs. Numbers of animals and pesictides/herbicides listed by acreage and sub-watershed were provided by the local SWCD (ASWCC 1998).

		Yellow River Sub-watersheds (0314-0103)										
		010	020	030	040	050	060	070	080	090	110	190
County (s)		Covington	Covington Crenshaw	Covington	Covington	Covington	Covington	Covington	Covington	Covington	Covington	Covington
Acres Reported (%)		100	91	69	95	100	100	100	100	100	0	100
Pesticides Applied	Est. % Total Acres	5	10	7	5	4	2	7	5	5	*	5
Cattle	# / Acre	0.07	0.06	0.04	0.13	0.10	0.02	0.09	0.04	0.10	*	0.07
	A.U./Acre	0.07	0.06	0.04	0.13	0.10	0.02	0.09	0.04	0.10	*	0.07
Dairy	# / Acre	0.01			<0.01						*	
	A.U./Acre	0.02			<0.01						*	
Swine	# / Acre	<0.01			0.01				0.01		*	
	A.U./Acre	<0.01			<0.01				<0.01		*	
Poultry - Broilers	# / Acre	11.90	26.99	11.83	25.35	7.94			2.24	11.25	*	
	A.U./Acre	0.10	0.22	0.09	0.20	0.06			0.02	0.09	*	
Poultry - Layers	# / Acre	0.98	0.76	2.96	3.09	0.98					*	
	A.U./Acre	0.01	0.01	0.02	0.02	0.01					*	
Total	A.U./Acre	**0.19**	**0.29**	**0.15**	**0.37**	**0.17**	**0.02**	**0.09**	**0.06**	**0.19**	*	**0.07**
Potential for NPS Impairment		Mod	High	Mod	High	Mod	Low	Mod	Low	Mod	*	Low
Aquaculture	% Total Acres					0.04					*	0.04

* No data reported for this portion of the subwatershed

Table 3a, cont. Estimates of animal concentrations, animal units (AU), percent aquaculture, and percent of acres where pesticides/herbicides applied in the Yellow River (0314-0103), Blackwater River (0314-0104), Perdido River (0314-0106), and Perdido Bay (0314-0107) CUs. Numbers of animals and pesictides/herbicides listed by acreage and sub-watershed were provided by the local SWCD (ASWCC 1998).

		Blackwater River Sub-watersheds (CU 0314-0104)						Perdido River Sub-watersheds (CU 0314-0106)				
		010	040	080	100	140	170	010	020	040	050	060
County (s)		Covington Escambia	Covington*	Escambia*	Escambia	Escambia	Escambia*	Baldwin Escambia	Baldwin	Baldwin	Baldwin	Escambia*
Acres Reported (%)		100	0	0	100	100		100	100	100	100	
Pesticides Applied	Est. % Total Acres	4	*	*		8	*	15	9	14	*	*
Cattle	# / Acre	0.05	*	*	<0.01	0.01	*	0.02	0.04	0.02	0.03	*
	A.U./Acre	0.05	*	*	<0.01	0.01	*	0.02	0.04	0.02	0.03	*
Dairy	# / Acre		*	*			*			<0.01		*
	A.U./Acre		*	*			*			<0.01		*
Swine	# / Acre		*	*			*					*
	A.U./Acre		*	*			*					*
Poultry - Broilers	# / Acre		*	*			*					*
	A.U./Acre		*	*			*					*
Poultry - Layers	# / Acre		*	*			*					*
	A.U./Acre		*	*			*					*
Total	A.U./Acre	**0.05**	*	*	**<0.01**	**0.01**	*	**0.02**	**0.04**	**0.02**	**0.03**	*
Potential for NPS Impairment		Low	*	*	Low	Low	*	Low	Low	Low	Low	*
Aquaculture	% Total Acres		*	*			*					*

* No data reported for this portion of the subwatershed

Table 3a, cont. Estimates of animal concentrations, animal units (AU), percent aquaculture, and percent of acres where pesticides/herbicides applied in the Yellow River (0314-0103), Blackwater River (0314-0104), Perdido River (0314-0106), and Perdido Bay (0314-0107) CUs. Numbers of animals and pesictides/herbicides listed by acreage and sub-watershed were provided by the local SWCD (ASWCC 1998).

		Perdido River Sub-watersheds (CU 0314-0106)								Perdido Bay Sub-watersheds (0314-0107)		
		070	100	110	140	150	170	180	190	020	030	040
County (s)		Escambia	Baldwin	Baldwin	Baldwin	Baldwin	Baldwin	Baldwin	Baldwin	Baldwin	Baldwin	Baldwin
Acres Reported (%)		100	100	100	100	100	100	100	100	100	100	100
Pesticides Applied	Est. % Total Acres	17	8	*	15	6	8	16	34	29	28	10
Cattle	# / Acre		0.03		0.05		0.03	0.06	0.06	0.05	0.05	0.01
	A.U./Acre		0.03		0.05		0.03	0.06	0.06	0.05	0.05	0.01
Dairy	# / Acre							0.01	<0.01			
	A.U./Acre							0.01	<0.01			
Swine	# / Acre							0.01	0.01	0.01		
	A.U./Acre							<0.01	<0.01	<0.01		
Poultry - Broilers	# / Acre											
	A.U./Acre											
Poultry - Layers	# / Acre						4.06					
	A.U./Acre						0.03					
Total	A.U./Acre	**<0.01**	**0.03**	**<0.01**	**0.05**	**<0.01**	**0.03**	**0.06**	**0.06**	**0.05**	**0.05**	**0.01**
Potential for NPS Impairment		Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Aquaculture	% Total Acres						0.01		0.01			

* No data reported for this portion of the subwatershed

Table 4a. Sedimentation estimates by source, forest condition, septic tank information and resource concerns by sub-watershed in the Yellow River (0314-0103) and Blackwater River (0314-0104) CUs as provided by the local SWCD (ASWCC 1998). (*Indicates not reported)

Cataloging Unit	0314-0103											0314-0104					
Subwatershed	**010**	**020**	**030**	**040**	**050**	**060**	**070**	**080**	**090**	**110***	**190**	**010**	**040***	**080***	**100**	**140**	**170***
Forest Condition																	
% Subwatershed Needing Forest Improvement	17	32	20	17	14	16	13	14	15	*	17	6	*	*	*	*	*
Sediment Contributions(tons/acre/yr)																	
Cropland	0.3	0.4	0.4	0.3	0.3	0.1	0.5	0.3	0.4	*	0.3	0.3	*	*	0.1	0.1	*
Sand & Gravel Pits	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	*	<0.1	<0.1	*	*			*
Mined Land										*		<0.1	*	*			*
Developing Urban Land										*			*	*			*
Critical Areas	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	*	0.2	0.1	*	*			*
Gullies	0.3	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	*	0.3	0.2	*	*			*
Stream Banks	1.3	0.6	1.7	1.4	2.0	1.4	1.4	1.4	1.2	*	1.7	0.8	*	*			*
Dirt Roads and Roadbanks	1.2	0.5	1.2	1.2	1.2	1.2	1.1	1.2	1.2	*	1.1	0.7	*	*	0.1	0.2	*
Woodlands	0.2	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.2	*	0.2	0.1	*	*	<0.1	<0.1	*
Total Sediment	3.5	2.5	4.1	3.6	4.2	3.5	3.7	3.6	3.5	*	3.7	2.2	*	*	0.2	0.3	*
Potential for Sediment NPS	Low	Low	Mod	Low	Mod	Low	Low	Low	Low	*	Low	Low	*	*	Low	Low	*
Septic Tanks																	
# Septic Tanks per acre	0.010	0.010	0.010	0.010	0.010	0.000	0.010	0.020	0.010	*	<0.001	<0.001	*	*	0.000	0.000	*
# Septic Tanks Failing per acre*	0.001	0.001	0.001	0.001	0.002	0.000	0.001	0.002	0.001	*	0.002	<0.001	*	*	0.000	0.000	*
# of Alternative Septic Systems/acre*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	*	<0.001	<0.001	*	*	0.000	0.000	*
Resource Concerns in the Subwatershed																	
Excessive Erosion on Cropland	X	X	X	X	X	X	X	X	X	*	X	X	*	*	X		*
Gully Erosion on Agricultural Land	X	X	X	X	X		X	X	X	*			*	*			*
Road and Roadbank Erosion	X	X	X	X	X	X	X	X	X	*	X	X	*	*	X	X	*
Poor Soil Condition (cropland)	X	X	X	X	X	X	X	X	X	*	X	X	*	*			*
Excessive Animal Waste Applied to Land										*			*	*			*
Excessive Pesticides Applied to Land		X								*			*	*			*
Excessive Sediment from Cropland	X	X	X	X	X	X	X	X	X	*	X	X	*	*			*
Excessive Sediment From Roads/Roadbanks	X	X	X	X	X	X	X	X	X	*	X	X	*	*	X	X	*
Excessive Sediment from Urban Development										*			*	*			*
Inadequate Management of Animal Wastes	X	X	X	X				X	X	*			*	*			*
Nutrients in Surface Waters		X								*			*	*			*
Pesticides in Surface Waters		X								*			*	*			*
Livestock Commonly have Access to Streams	X	X	X	X	X	X	X	X	X	*	X	X	*	*			*

Table 4a. cont., Sedimentation estimates by source, forest condition, septic tank information and resource concerns by subwatershed in the Perdido River (0314-0106) and Perdido Bay (0314-0107) CUs as provided by the local SWCD (ASWCC 1998). (*Indicates not reported)

Basin Code- Cataloging Unit	0314-0106													0314-0107		
Subwatershed	**010**	**020**	**040**	**050**	**060***	**070**	**100**	**110**	**140**	**150**	**170**	**180**	**190**	**020**	**030**	**040**
Forest Condition																
% Subwatershed Needing Forest Improvement	8	69	57	87	*	*	84	89	70	81	94	64	44	43	49	47
Sediment Contributions(tons/ac/yr)																
Cropland	0.4	0.2	0.4	0.1	*	0.4	0.2	0.1	0.4	0.2	0.1	0.4	0.8	0.0	0.5	0.2
Sand & Gravel Pits	0.2		0.1		*					0.3	0.3	0.3	0.2	0.2	0.4	0.6
Mined Land					*											
Developing Urban Land			1.2		*				0.1	0.5	0.7	1.8	1.5	1.9	2.9	3.8
Critical Areas	<0.1	0.2	0.3	0.1	*		<0.1	0.1	0.7	0.6	0.4	0.7	1.0	0.8	0.4	0.5
Gullies		0.3	1.2		*		0.3		2.5	1.0	1.1	1.9	2.1	1.1	0.2	0.7
Stream Banks	<0.1	<0.1	<0.1	<0.1	*		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dirt Roads and Roadbanks	0.2	0.8	0.4	0.6	*	<0.1	0.4	0.4	0.6	0.4	0.4	0.7	0.8	0.5	0.9	0.3
Woodlands	<0.1	0.5	0.4	0.3	*	<0.1	0.4	0.3	0.2	0.4	0.4	0.3	0.2	1.5	0.2	0.2
Total Sediment	0.8	2.1	3.9	1.1	*	0.5	1.4	1.0	4.5	3.4	3.4	6.1	6.6	6.0	5.4	6.2
Potential for Sediment NPS	Low	Low	Low	Low	*	Low	Low	Low	Mod	Low	Low	Mod	Mod	Mod	Mod	Mod
Septic Tanks																
# Septic Tanks per acre	0.000	0.020	0.020	0.000	*	0.020	0.000	0.000	0.010	0.010	0.010	0.010	0.010	0.040	0.110	0.020
# Septic Tanks Failing per acre*	<0.001	0.000	0.000	0.000	*	<0.001	0.000	0.000	<0.001	0.000	0.000	<0.001	<0.001	0.001	0.002	<0.001
# of Alternative Septic Systems/acre*	<0.001	0.002	0.002	0.000	*	0.000	0.000	0.000	<0.001	0.004	0.002	0.005	0.006	0.018	0.037	0.006
Resource Concerns in the Subwatershed																
Excessive Erosion on Cropland					*						X		X			
Gully Erosion on Agricultural Land		X	X		*				X	X	X	X	X	X		X
Road and Roadbank Erosion	X	X	X		*		X	X	X	X	X	X	X	X	X	X
Poor Soil Condition (cropland)					*											
Excessive Animal Waste Applied to Land					*											
Excessive Pesticides Applied to Land					*											
Excessive Sediment from Cropland					*								X			
Excessive Sediment From Roads/Roadbanks		X	X	X	*		X	X	X			X	X	X		X
Excessive Sediment from Urban Development	X				*					X	X		X	X	X	X
Inadequate Management of Animal Wastes					*											
Nutrients in Surface Waters	X	X	X	X	*		X	X	X	X	X		X	X	X	X
Pesticides in Surface Waters					*											X
Access of Livestock to Streams		X			*							X				

Table 5a. Estimates of NPS impairment potential for subwatersheds in the Yellow River (0314-0103) and Blackwater River (0314-0104) CUs. Estimates are based on information provided by the local SWCD on Conservation Assessment Worksheets completed in 1998. Estimates of impairment potential from development are from current construction/stormwater authorization information provided by the Mining and NPS Unit of ADEM. Range of values used to define low, moderate, and high impairment potential for each category are listed in the Methods Tables 1b and 1c. Tables where raw data can be found are provided below.

CU	Sub-watershed	Potential NPS Impairment	Potential Sources of Impairment									
			Animal Husbandry	Aquaculture	Row Crops	Pasture Runoff	Mining	Forestry Practices	Sedimentation	Urban	Development	# Septic Tanks
Raw Data Tables			3b	3b	2b	2b	2b	4b	4b	2b	9b	4b
0314-0103	010	M	M	L	L	M	L	L	L	L	L	L
	020	M	H	L	L	M	L	M	L	L	M	L
	030	M	M	L	M	L	L	L	M	L	L	L
	040	M	H	L	L	H	L	L	L	L	L	L
	050	M	M	M	L	M	L	L	M	L	L	L
	060	L	L	L	L	L	L	L	L	L	L	L
	070	M	M	L	M	M	L	L	L	L	L	L
	080	L	L	L	L	L	L	L	L	M	H	L
	090	M	M	L	L	M	L	L	L	L	L	L
	110	---	---	---	---	---	---	---	---	---	L	---
	190	M	L	M	L	M	L	L	L	M	L	L
0314-0104	010	L	L	L	L	M	L	L	L	L	L	L
	040	---	---	---	---	---	---	---	---	---	L	---
	080	---	---	---	---	---	---	---	---	---	L	---
	100	L	L	L	L	L	L	---	L	L	L	L
	140	L	L	L	L	L	L	---	L	L	L	L
	170	---	---	---	---	---	---	---	---	---	L	---

Table 5a, cont. Estimates of NPS impairment potential for subwatersheds in the Perdido River (0314-0106) and Perdido Bay (0314-0107) CUs. Estimates are based on information provided by the local SWCD on Conservation Assessment Worksheets completed in 1998. Estimates of impairment potential from development are from current construction/stormwater authorization information provided by the Mining and NPS Unit of ADEM. Range of values used to define low, moderate, and high impairment potential for each category are listed in the Methods Tables 1b and 1c. Tables where raw data can be found are provided below.

CU	Sub-watershed	Potential NPS Impairment	Potential Sources of Impairment									
			Animal Husbandry	Aquaculture	Row Crops	Pasture Runoff	Mining	Forestry Practices	Sedimentation	Urban	Development	# Failing Septic Tanks
Raw Data Tables			3b	3b	2b	2b	2b	4b	4b	2b	9b	4b
0314-0106	010	M	L	L	M	L	M	L	L	L	M	L
	020	M	L	L	L	L	L	H	L	L	L	L
	040	M	L	L	L	L	L	H	L	M	M	L
	050	M	L	L	L	L	L	H	L	L	L	L
	060	---	---	---	---	---	---	---	---	---	---	---
	070	L	L	L	M	L	L	---	L	H	L	L
	100	M	L	L	L	L	L	H	L	L	L	L
	110	M	L	L	L	L	L	H	L	L	L	L
	140	M	L	L	M	L	L	H	M	L	M	L
	150	M	L	L	L	L	L	H	L	L	L	L
	170	M	L	L	L	L	L	H	L	M	L	L
	180	M	L	L	L	L	M	H	M	M	M	L
	190	M	L	L	M	L	L	M	M	M	H	L
0314-0107	020	M	L	L	M	L	L	M	M	M	H	L
	030	M	L	L	M	L	L	M	M	M	M	L
	040	M	L	L	L	L	M	M	M	H	H	L

Table 6a. Physical characteristics and habitat quality of sites assessed in the Yellow River (0314-0103), Blackwater River (0314-0104) and Perdido River (0314-0106) CUs.

		0103		0104	0106
		PRCC-1	CLC-1	BRE-1	BRU-2
Sub-watershed #		050	060	010	070
Date (YYMMDD)		990526	990525	990525	990504
Ecoregion/ Subregion		65g	65g	65f	65f
Drainage area (mi^2)		8	33	27	
Width (ft)		12	20	20	10
Canopy Cover*		S	S	MO	MS
Depth (ft)	Riffle	---	---	---	---
	Run	0.3	1.5	2.0	2.0
	Pool	1.5	>4.0	>6.0	6.0
Substrate (%)	Bedrock	---	---	---	---
	Boulder	---	---	---	---
	Cobble	---	---	---	---
	Gravel	---	---	1	15
	Sand	87	77	85	75
	Silt	1	6	2	5
	Detritus	5	15	11	---
	Clay	2	2	1	---
	Org. Silt	---	---	---	---
Geomorphology		---	---	---	---
Habitat Survey (% maximum)					
Instream Habitat Quality		24	55	55	43
Sediment Deposition		59	84	84	80
Sinuosity		63	63	65	75
Bank and Vegetative Stability		60	69	65	86
Riparian Measurements		95	73	88	90
Habitat Assessment Score		123	152	156	161
% Maximum		56	69	71	73
Assessment		E	E	E	E

*Canopy Cover: S = Shaded, MS = Mostly Shaded, 50/50 = Half Shaded / Half Open, MO = Mostly Open, O = Open

Table 7a. Bioassessment results conducted in the Yellow (0314-0103), Blackwater (03140104), and Perdido (0314-0106) River CUs.

	Cataloging Unit			
	0103		0104	106
Sub-watershed	050	060	010	070
Station	PRCC-1	CLC-1	BRE-1	BRU-2
Macroinvertebrate community				
Date (yymmdd)	990526	990525	990525	990504
# EPT families	8	16	10	3
Assessment	Fair	Excellent	Good	Poor
Fish community				
Date (yymmdd)	990713	990713		
Time (min)	30	30		
Richness measures				
# species	18	10		
# darter species	2	2		
# minnow species	8	4		
# species	4	1		
# sucker species	0	0		
# intolerant species	1	1		
Composition measures				
% sunfish	14.0	7.1		
% omnivores and herbivores	2.3	0.0		
% insectivourous cyprinids	65.1	77.1		
% top carnivores	1.2	1.4		
Population measures				
Individuals	86	70		
# collected per hour	172	140		
% disease and anomalies	0.0	0.0		
IBI Score	46	38		
Assessment	Fair	Poor		

Table 8a. List of previous water quality assessments (by basin) conducted on streams within the Yellow River, Blackwater River, and Perdido River basins from 1993-1999.

Waterbody	*Date(s)*	*Assessment Type**	*Tables and Appendices* +
Yellow River (03140103)			
020 Pigpen Creek	1998	C, H	F-4b, F-5b
050 Indian Creek	1999	C	F-3b
060 Clear Creek	1992, 1993, 1995, 1996, 1998, 1999	C, H, M, F	T-6b, T-7b, F-1b, F-2b
060 Tributary to Dry Creek	1998	C, H	F-4b, F-5b
080 Bay Branch	1999	C	F-3b
190 Tributary to Horsehead Creek	1999	C, H	F-4b, F-5b
Blackwater River (03140104)			
010 Bear Creek	1991, 1992, 1993, 1995, 1996, 1998	C, H, M, F	T-6b, T-7b, F-1b, F-2b
Perdido River (03140106)			
050 Tributary to Indian Creek	1998	C, H	F-4b, F-5b
070 Brushy Creek	1999	C, H, M	T-6b, T-7b, F-3b
100 Tributary to Perdido River	1998	C, H	F-4b, F-5b
170 Hollinger Creek	2000	C, H	F-4b, F-5b
190 Caney Bayou	2000	C, H	F-4b, F-5b
190 Rock Creek	1996	C	F-6b

* C=Chemical; H=Habitat; M=Macroinvertebrate; F=Fish

\+ T=tables; F=appendices

Table 9a. Summary of the number of current construction/stormwater authorizations and NPDES permits issued within the Yellow, Blackwater, and Perdido River basins. Those subwatersheds with more than five authorizations or permits in a category are in bold.

Cataloging Unit and Subwatershed	# of Authorizations / #NPDES permits					
	Total Number of Permits and Authorizations	Construction/ Stormwater Authorizations[c]	Mining NPDES[a]	Municipal NPDES[b]	Semi Public/ Private NPDES[b]	Industrial Process Wastewater - NPDES Majors[b]
Yellow River (0314-0103)						
010	1	1				
020	3	3				
030	2	2				
040	2	1		1		
050	1	1				
060	0					
070	2	2				
080	**7**	**7**				
090	2	1		1		
110	1	1				
190	1	1				
Blackwater River (0314-0104)						
010	2	2				
040	2	2				
080	1	1				
100	1	1				
140	1	1				
170	1	1				
Perdido River (0314-0106)						
010	4	4				
020	2	2				
040	7	4	3			
050	2	2				
060	1	1				
070	8	2	1	1		4
100	2	2				
110	2	2				
140	5	4			1	
150	2	2				
170	9	2	1	1		5
180	5	4			1	
190	**21**	**17**	**2**	**2**		
Perdido Bay (0314-0107)						
020	**17**	**15**	**1**		**1**	
030	3	3				
040	**62**	**56**	**1**	**4**	**1**	

[a]Source: ADEM Mining and Nonpoint Source Unit, Field Operations, database retrieval (9/14/99)
[b]Source: 1996 CWS Report (ADEM 1999a)
[c]Source: ADEM Mining and Nonpoint Source Unit, Field Operations, database retrieval (9/23/99)

Table 10a. Station assessed within the Yellow River basin as part of the Southeast Alabama NPS screening study.

Stream	Station	Sub-watershed	County	T	R	S	Sub-Ecoregion **	Basin Area (mi^2)	Assessment Type*
Yellow (0314-0103)									
Poplar Creek	PRCC-1	050	Covington	2N	16E	2	65g	8	C,H,M,F

* Assessment Type: C=Chemical Assessment; H= Habitat Assessment; M=Aquatic Macroinvertebrate; F=Fish Assessment
** Level IV Ecoregions of Alabama (Griffith, et.al. 1999)

Table 11a. List of waterbodies within the Florida Panhandle basins on ADEM's draft 2000 §303(d) list. Nonpoint sources and causes of impairment are listed (ADEM 2001b).

Waterbody	Sub-watershed	Miles impaired	Use	Support Status	Nonpoint Sources	Causes of Impairment
Yellow River (0314-0103)						
Unnamed tribuary to Jackson Lake	020	1.3	F&W	Non	Int. animal feeding operations, pasture	Nutrients; OE/DO
Unnamed tribuary to Jackson Lake	020	0.2	F&W	Non	Int. animal feeding operations, pasture	Nutrients; OE/DO
Perdido River (0314-0106)						
Boggy Branch	070	0.2	F&W	Partial	Industrial	OE/DO; Zinc; Chlorides
Brushy Creek	070	0.2	F&W	Non	Industrial, municipal, Urban runoff, storm sewers	OE/DO

Table 12a. Summary of Assessments conducted as part of the Nonpoint Source Monitoring Project.

Subwatershed	Station	*Assessment*				Overall Assessment
		Habitat	*Macroinv.*	*Fish*	*Chemical* [a]	
Yellow (0314-0103)						
050	PRCC-1	Excellent	Fair	Fair	U	Fair
060	CLC-1[b]	Excellent	Excellent	Poor	U	Poor
Blackwater (0314-0104)						
010	BRE-1	Excellent	Good	---	U	Good
Perdido (0314-0106)						
070	BRU-2[c]	Excellent	Poor	---	D	Poor

a. U: Water quality problems were undetected; D: water quality problems detected.

b. more data needed to verify source of impairment

c. impairment primarily caused by urban sources

Table 13a. Priority listing of subwatersheds assessed as part of the Southeast Alabama Basin Nonpoint Source Monitoring Project.

Subwatershed Number	Subwatershed Name	Lowest station assessment (Fair/Poor)	Suspected cause(s)	Suspected nonpoint source(s)
Yellow (0314-0103)				
050	Yellow River	Fair	Sedimentation, nutrients	Animal husbandry, pasture runoff

SECTION II: ESCAMBIA RIVER BASINS

Accounting Unit 031403

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Land use: The Escambia River Basins contain 5 CUs comprised of 33 sub-watersheds (Fig. 1a). They drain 4,503 mi^2 within Bullock, Butler, Coffee, Conecuh, Covington, Crenshaw, Escambia, Pike, and Montgomery Counties (Fig. 1a). The CUs drain portions of 4 subecoregions of the Southeastern Plains (65) Ecoregion (Fig. 2a).

Table R-1b summarizes SWCD estimates of percent land cover within the 5 CUs. Land use throughout the basins was primarily forest mixed with some cropland and pasture. Percent row crop was highest in the Escambia River CU.

Table R-1b. Estimates of percent land cover within the Yellow River, Blackwater River, Perdido River and Perdido Bay CUs (ASWCC and SWCD 1998).

Cataloging Unit	Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
Upper Conecuh River	76%	11%	8%	0%	2%	1%	2%
Patsaliga River	76%	7%	11%	0%	2%	0%	4%
Sepulga River	84%	6%	7%	0%	2%	0%	1%
Lower Conecuh River	88%	5%	3%	0%	2%	0%	1%
Escambia River	67%	21%	4%	2%	3%	0%	3%

NPS impairment potential: The overall potential for NPS impairment was estimated to be *moderate* in 18 sub-watersheds (Fig. 3a). Impairment from silviculture was a concern throughout the Escambia River basins (Fig. 4a). Potential for impairment associated with pasture runoff (Fig. 5a) and animal husbandry (Fig. 6a) were concerns within the Upper Conecuh, Patsaliga, and Sepulga River CUs.

Historical data/studies: The majority of assessments conducted within the Escambia River basins were collected during 4 major projects conducted by ADEM (Fig. 7a). These data include both monitored and evaluated assessments. Monitored assessments are based on chemical, physical, and/or biological data collected using commonly accepted and well-documented methods. Evaluated assessments are based on observed conditions, limited water quality data, water quality data older than 5 years, or estimated impacts from observed or suspected activities.

Results of monitored assessments were used in this report to assess habitat, biological, and chemical conditions within a sub-watershed. Monitored assessments were conducted during ADEM's Ecoregional Reference Site Program (Appendix F-1) and §303(d) Waterbody Monitoring Program (Appendix F-2). Habitat and biological data are provided in Tables 6b and 7b, respectively. Chemical and physical data are provided in the appendices listed above. Evaluated assessments were conducted in conjunction with ADEM's ALAMAP Program (Appendix F-3) and Clean Water Strategy Project (Appendix F-4). A summary of each project, including lead agency, project objectives, data collected, and applicable quality assurance manuals, is provided in the appendices.

Assessments conducted during the SE Alabama NPS Screening Assessment: Sub-watersheds were selected for assessment during this study if recent monitoring data were not available, potential impacts from point sources or urban areas were minimal, and the sub-watershed was ranked as a priority by the local SWCD. In addition, sampling was coordinated among projects, such as ALAMAP and §303d Monitoring to maximize the number of streams assessed and to prevent duplication of effort. Assessments were conducted in 9 sub-watersheds in the Sepulga, Lower Conecuh, and Escambia River CUs (Fig. 7b).

***Sub-watershed summaries*:** Current and historical monitoring data were combined to provide a comprehensive assessment. A summary of information available for each of the 33 sub-watersheds is provided. The summaries are organized into 5 sections by CU. Each summary discusses land use, NPS impairment potential, assessments conducted within the sub-watershed, and the NPS priority rating based on available data. The summaries point out significant data and reference appropriate tables and appendices. Assessment of habitat, biological, and chemical conditions are based on long-term data from ADEM's Ecoregional Reference Site Program (ADEM 2000a). Tables referenced in the summaries are located at the end of Section II. Appendices are located at the end of this report.

Sub-watershed assessments: Habitat, chemical/physical, and biological indicators of water quality were monitored at 24 stations within 11 sub-watersheds. These data are summarized in Table 12b. Habitat and macroinvertebrate assessments were conducted at each of the 24 stations (Fig. 8b). Fish Community Index of Biotic Integrity (IBI) assessments were conducted at 12 of these stations (Fig. 9b). The overall condition for each station was rated as the lowest biological assessment result obtained. Seventeen of the 24 stations were assessed as *fair* or *poor* (Fig. 10b).

***Priority sub-watersheds*:** Six priority sub-watersheds were identified within the Escambia River basins (Fig. 10b). Three (50%) were located within the Patsaliga River CU, 2 (30%) in the Lower Conecuh River CU, and 1 (15%) was located within the Escambia River CU

Figure 1b. Sub-Watersheds of the Escambia River Accounting Unit (0314-03).

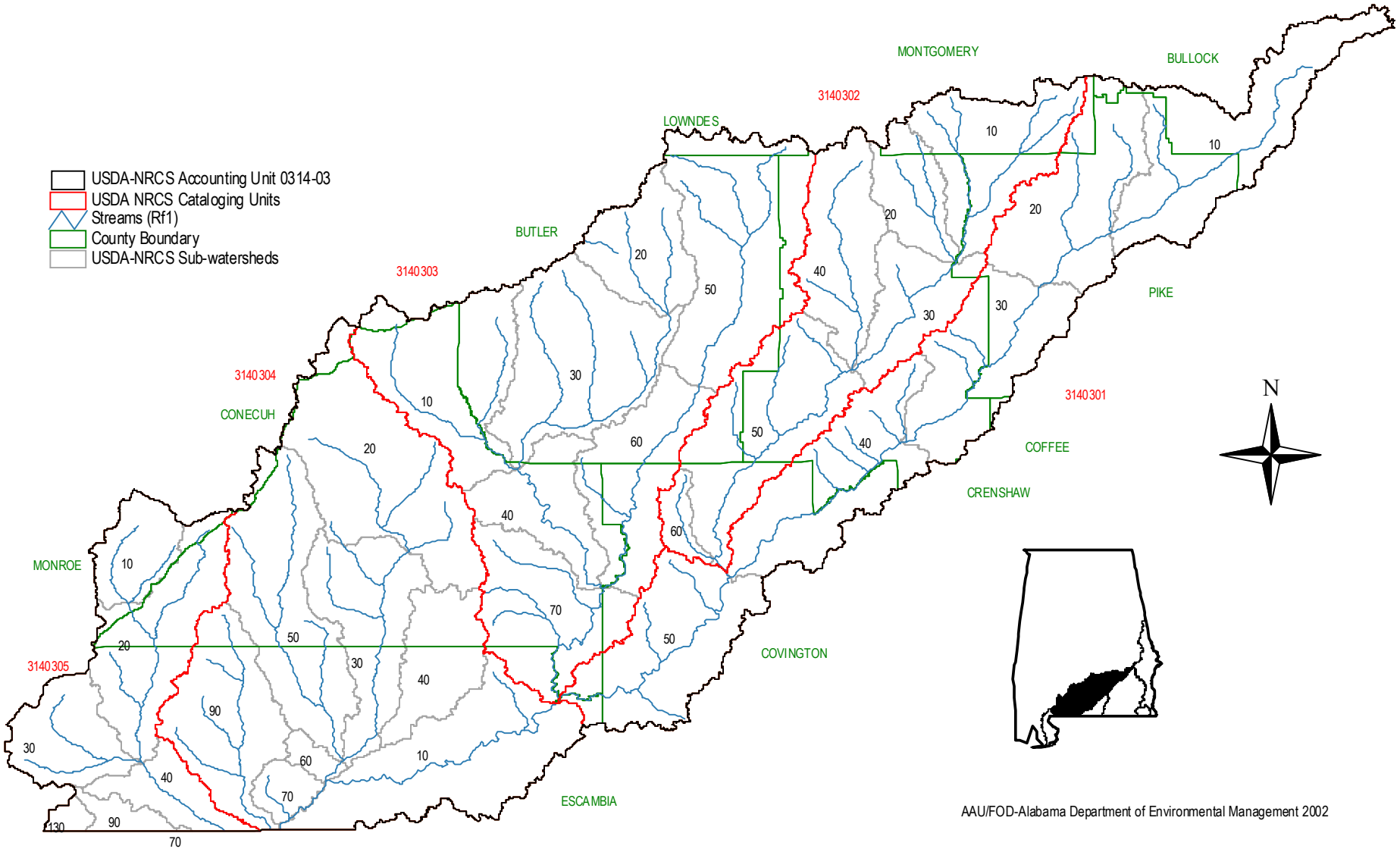

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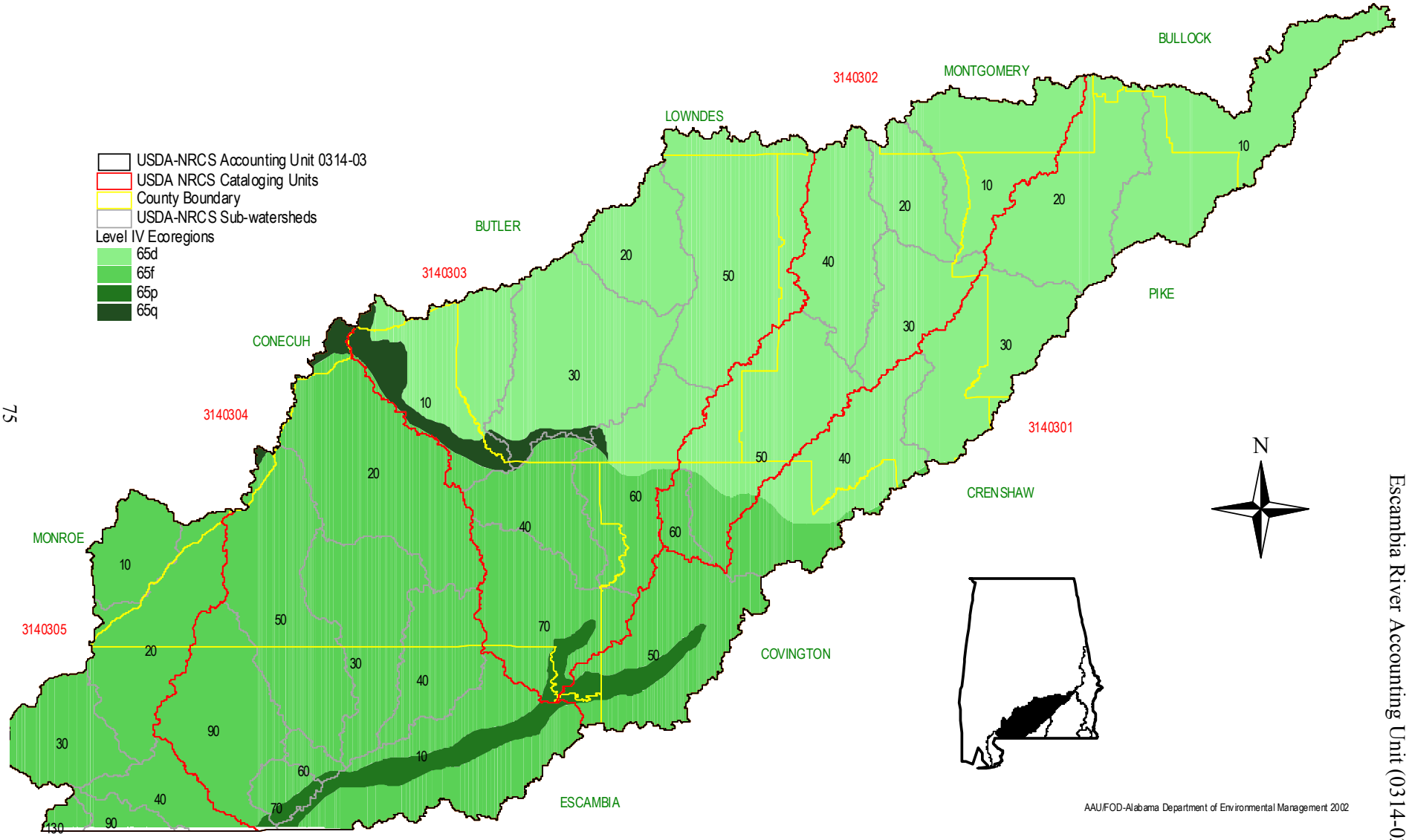
Figure 2b. Level III and IV Ecoregions of the Escambia River Accounting Unit (0314-03).



Escambia River Accounting Unit (0314-03)

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Figure 3b. Estimates of NPS Impairment Potential for Sub-Watersheds of the Escambia River Accounting Unit (0314-03).

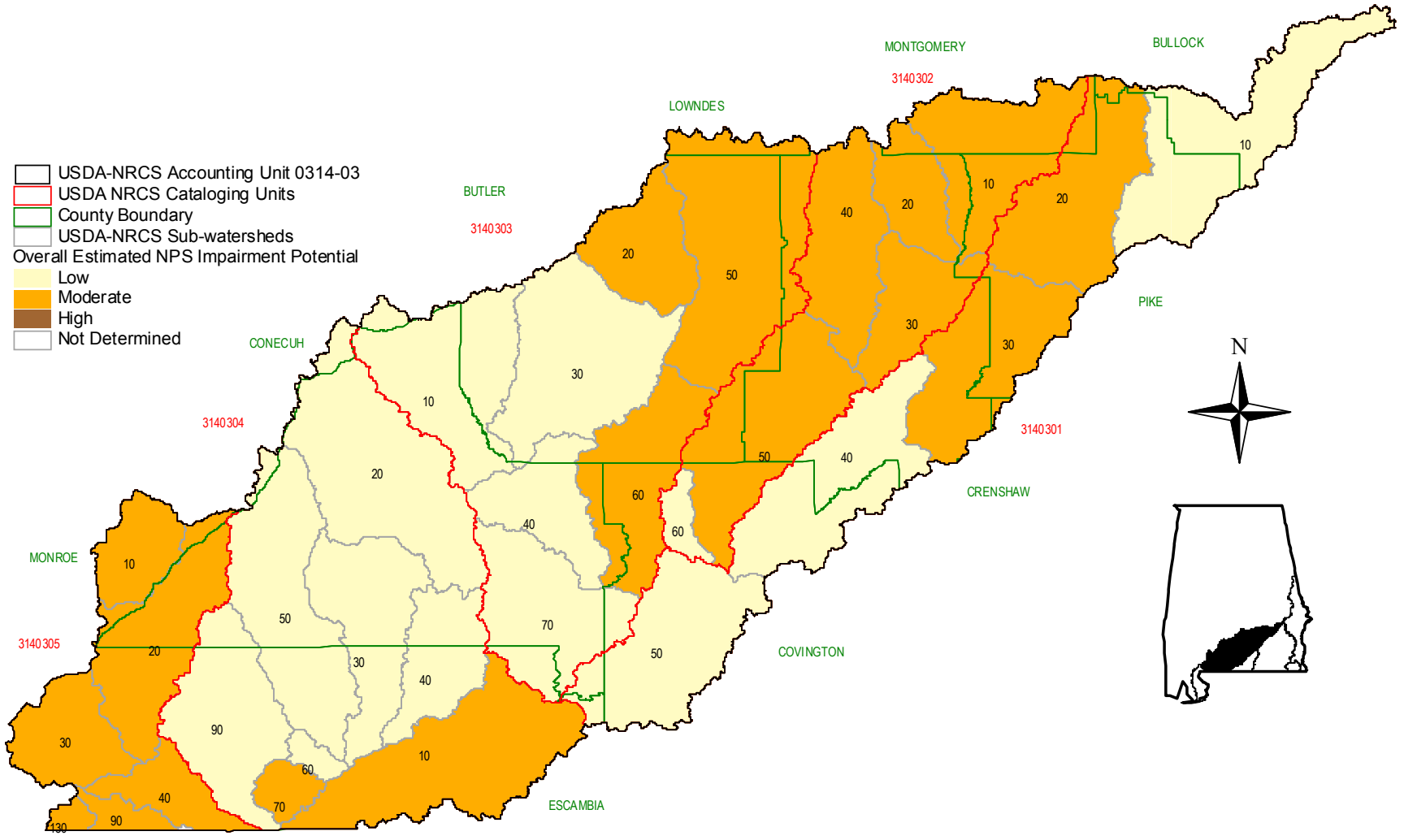

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Figure 4b. Estimates of NPS Impairment Potential from Silvicultural Activities based upon Local SWCD Forestry Activities Acreage Estimates for the Escambia River Accounting Unit (0314-03).

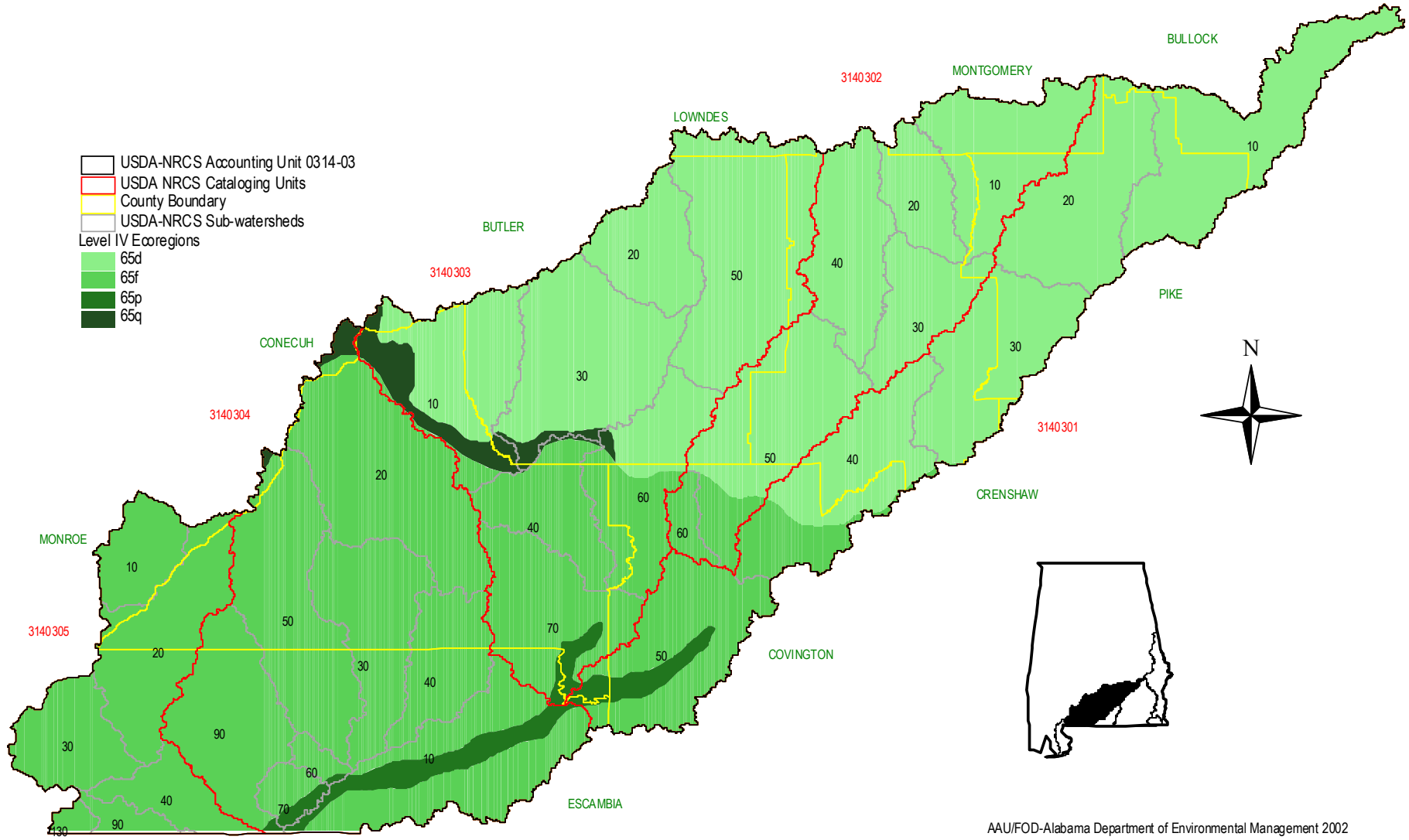

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Figure 5b. Estimates of NPS Impairment Potential from Pasture Landuse based upon Local SWCD Landuse Estimates for the Escambia River Accounting Unit (0314-03)

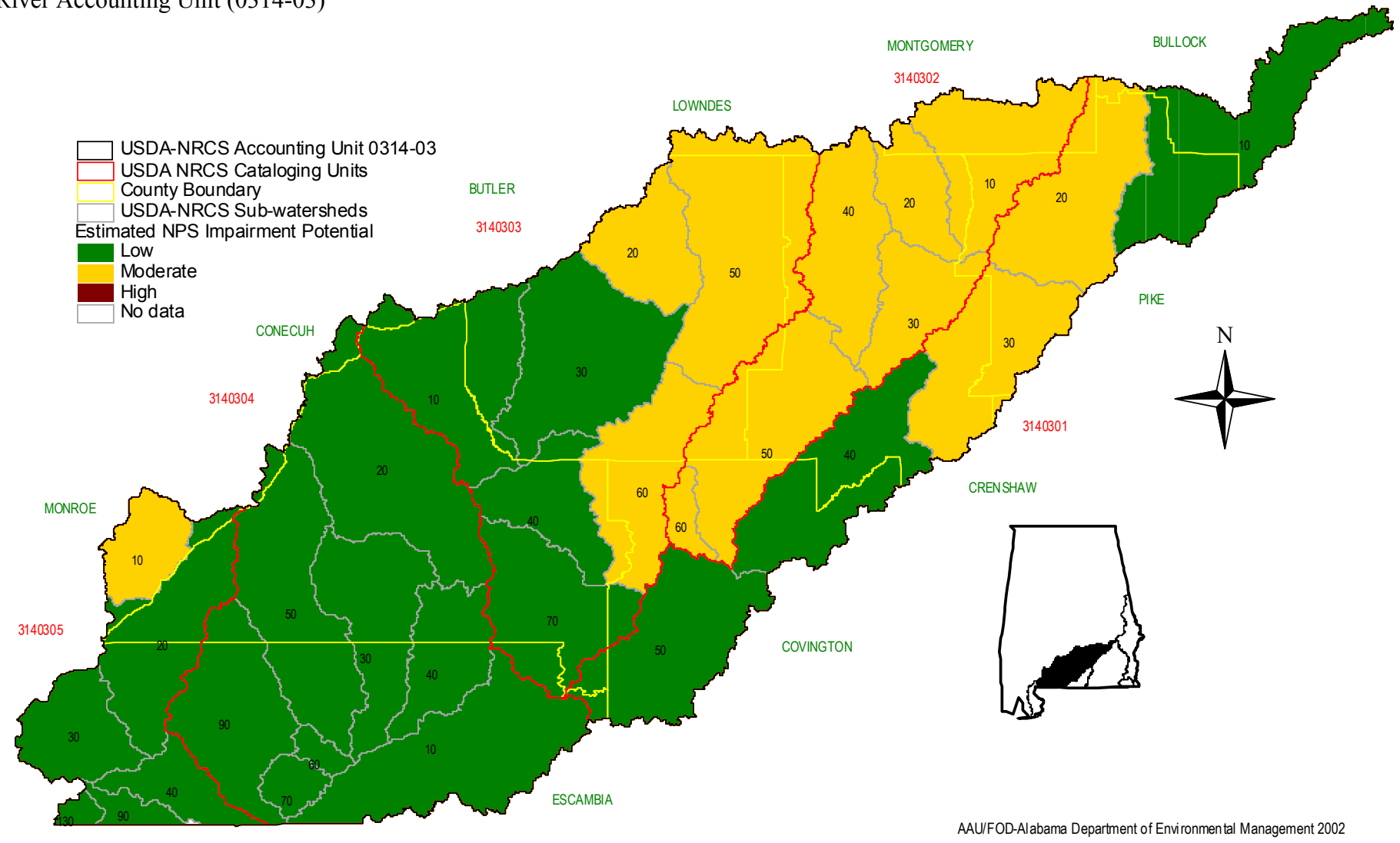

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Figure 6b. Estimates of NPS Impairment Potential from Animal Husbandry Activities based upon Local SWCD Animal Population Estimates for the Escambia River Accounting Unit (0314-03).

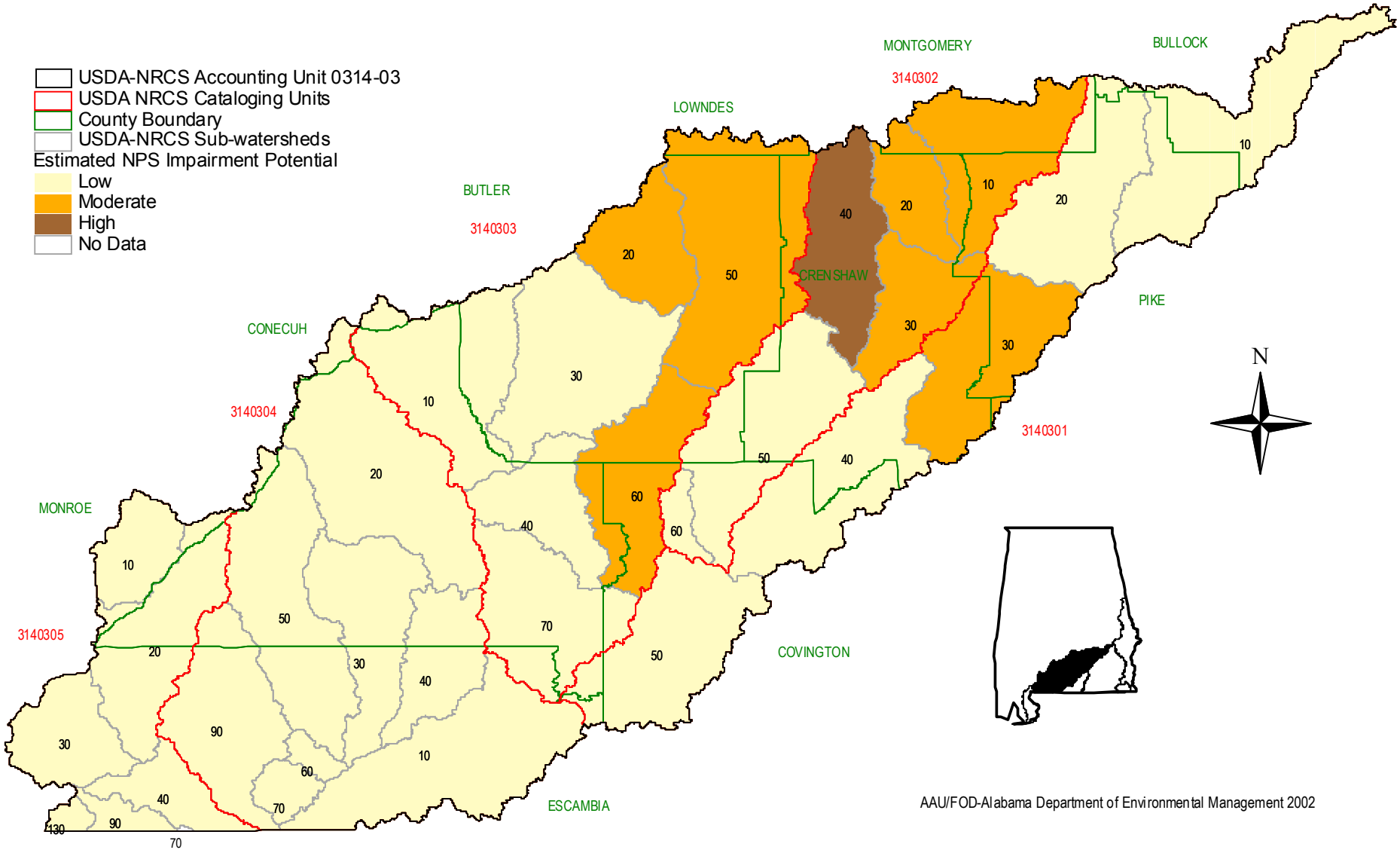

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Figure 7b. Monitoring Programs and Sampling Locations (From Appendix E) Within the Escambia River Accounting Unit (0314-03).

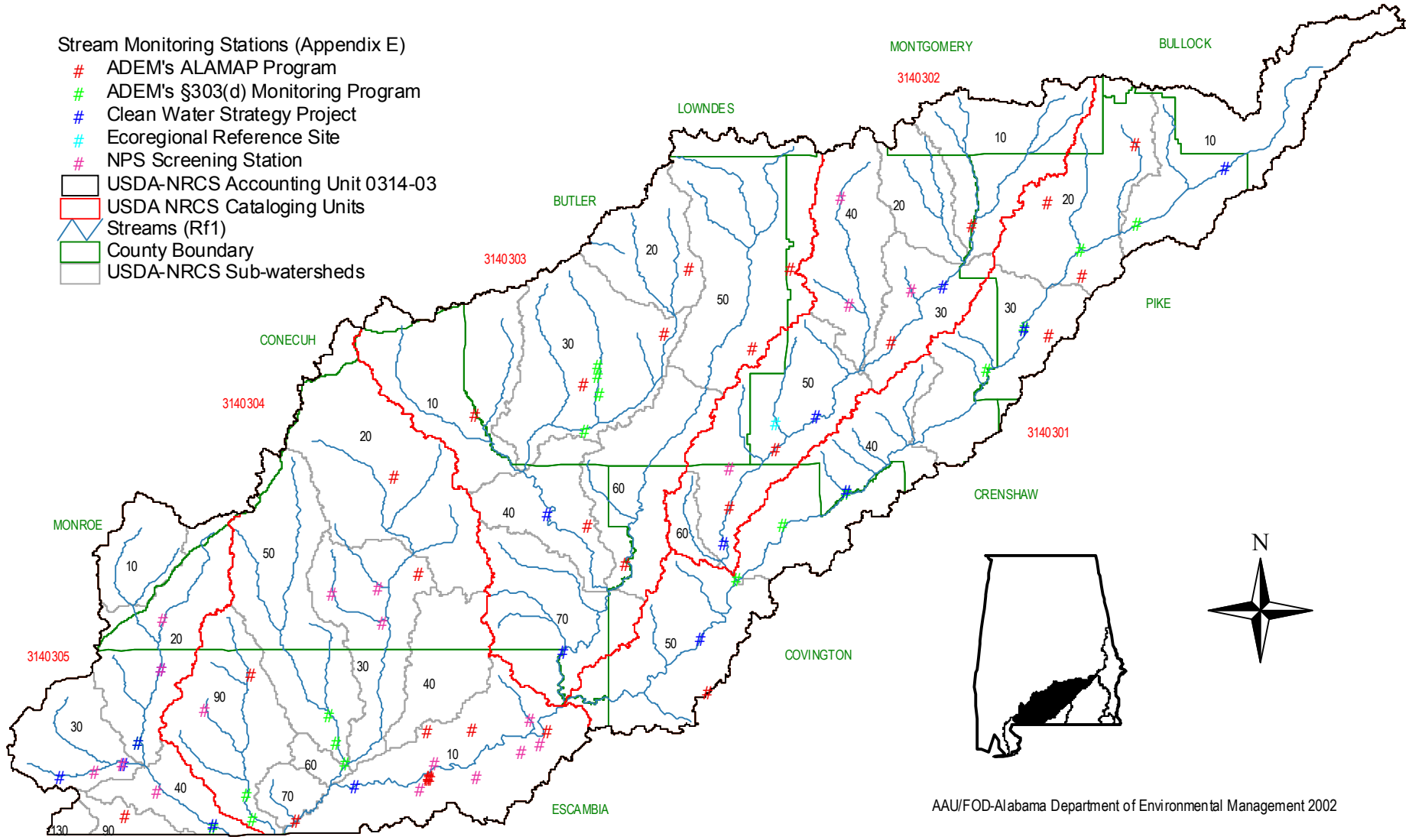

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Figure 8b. Habitat and Aquatic Macroinvertebrate Assessments Conducted within the Escambia River Accounting Unit (0314-03)

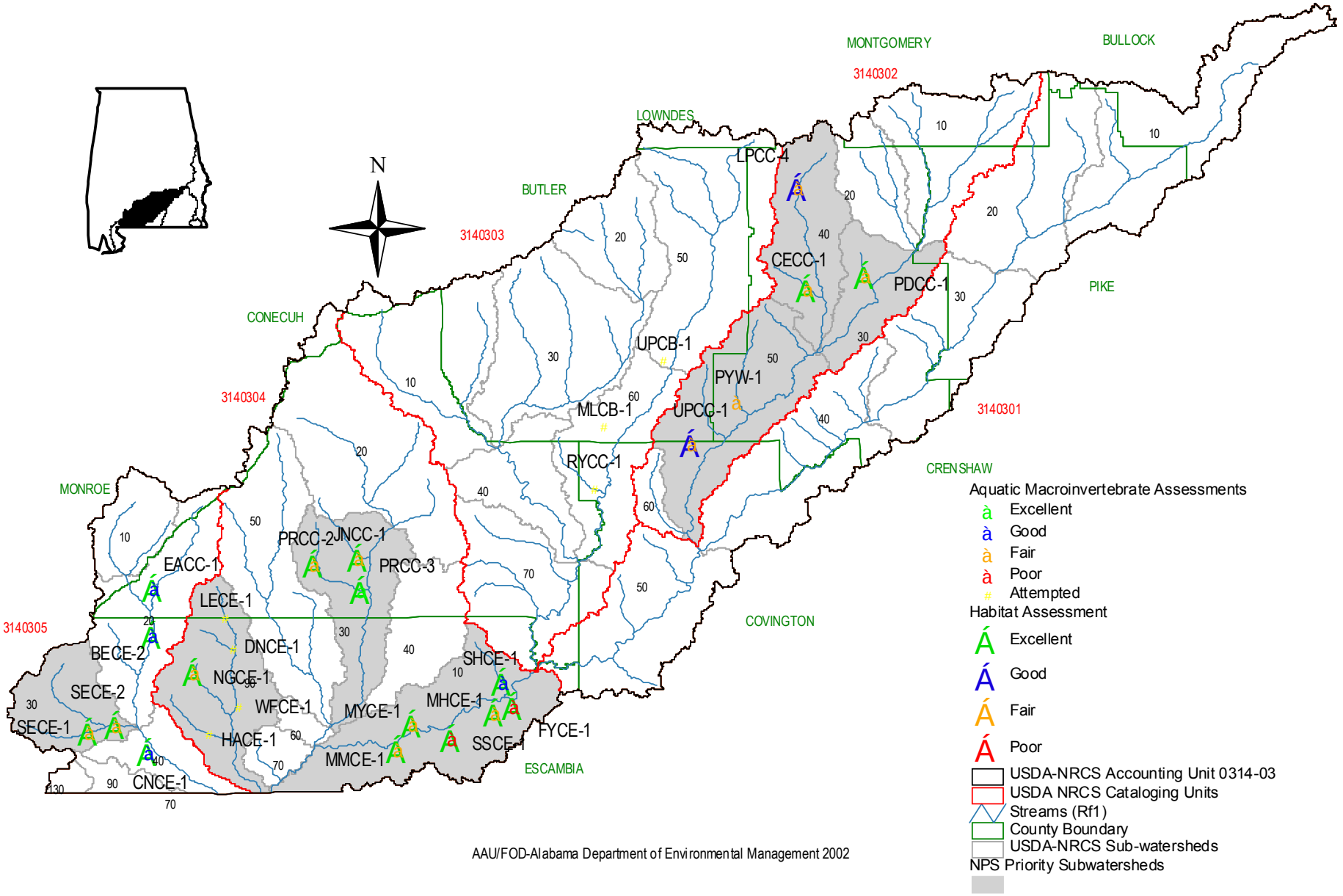

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Figure 9b. Fish Community IBI Assessments Conducted within the Escambia River Accounting Unit (0314-03).

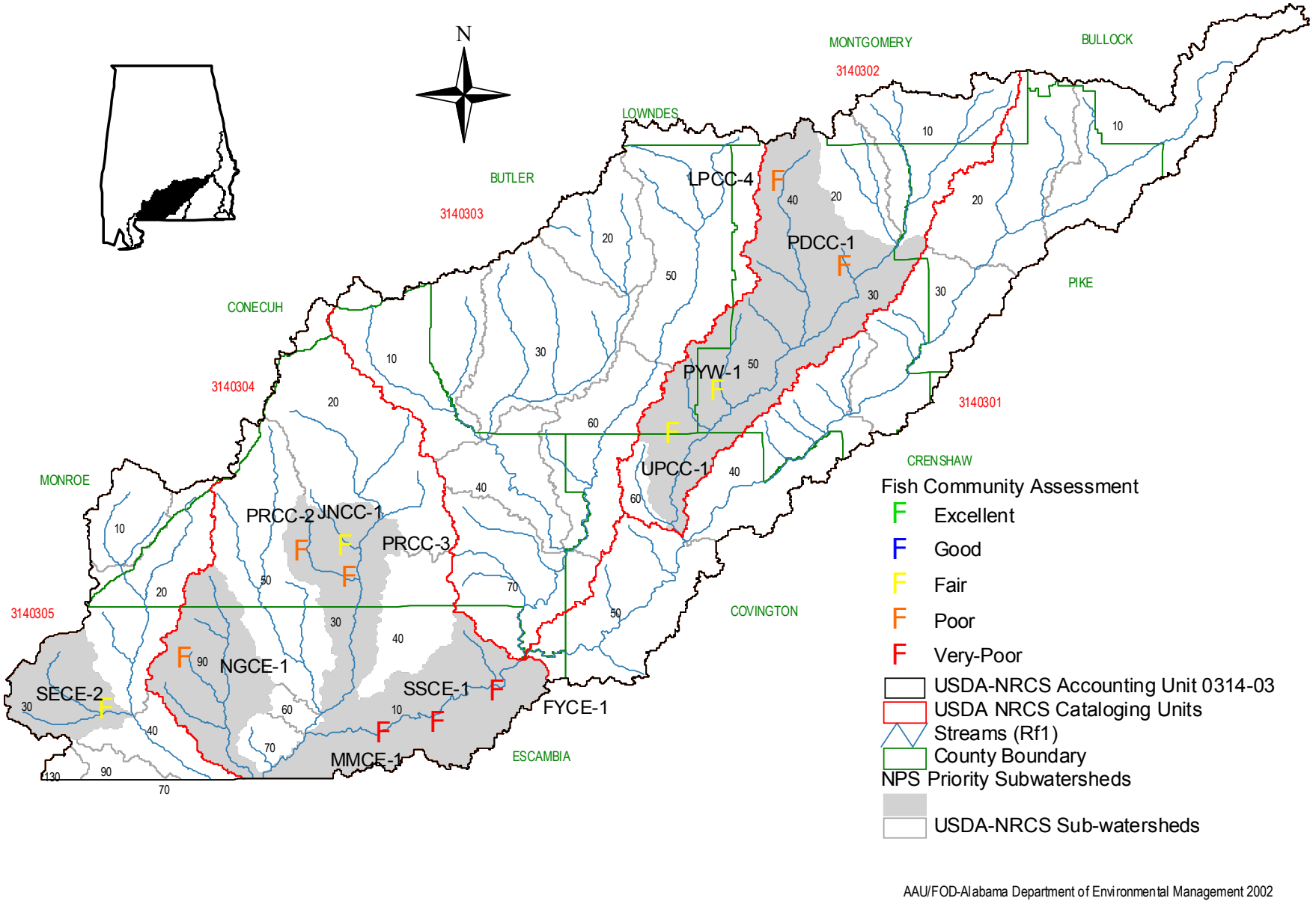

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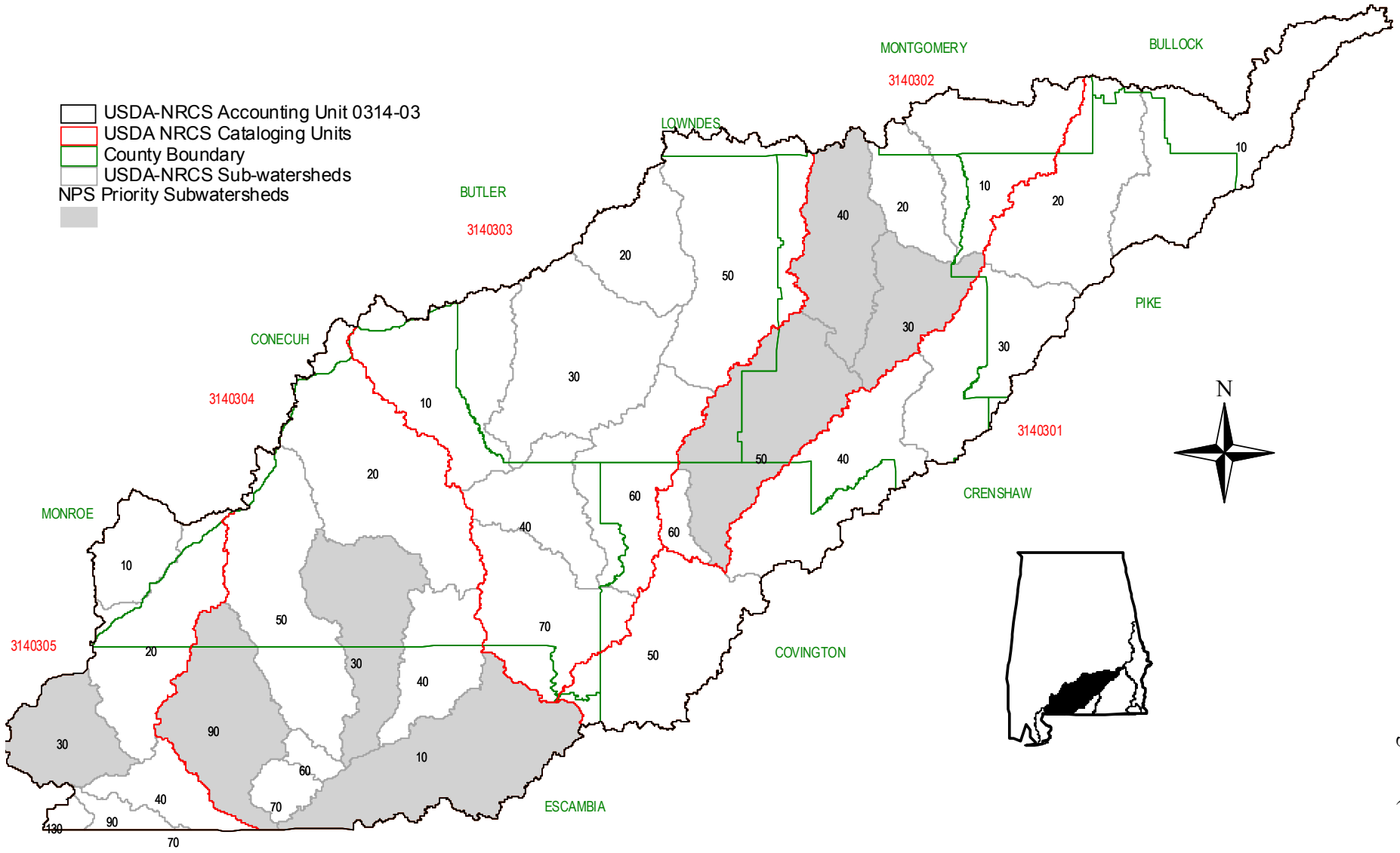
Figure 10b. NPS Priority Sub-Watersheds Located Within the Escambia River Accounting Unit (0314-03).



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Upper Conecuh CU (0314-0301) Summary

Land use: The Upper Conecuh CU contains 5 sub-watersheds located in a 839-mi^2 area of Bullock, Coffee, Crenshaw, Conecuh, Covington, Escambia, Montgomery, and Pike Counties. The CU drains portions of the Southern Hilly Gulf Coastal Plain (65d), Southern Pine Plains and Hills (65f), and Southeastern Floodplains and Low Terraces (65p) subecoregions (Fig. 2b). The primary land use was forest with some cropland and pasture. The Conecuh River sub-watershed (030) contains 2 segments on Alabama's 2000 §303(d) list of impaired waterbodies for impairments caused by siltation and organic enrichment (Table 11b).

Percent land cover estimated by local SWCD (ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
76%	11%	8%	0%	2%	1%	2%

NPS impairment potential: Two sub-watersheds were estimated to have a *moderate* potential for impairment from nonpoint sources. The main NPS concerns forestry and pasture. Impairment from urban runoff and development was a concern within 4 out of 5 sub-watersheds. The potential for impairment from all rural and urban NPS categories was *low* in 1 sub-watershed (010) (Table 5b).

Number of sub-watersheds with (M)oderate or (H)igh ratings for each NPS category (Table 5b).

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Moderate	2	1	1	1	2	0	3	1
High	0	0	0	0	0	0	0	0

Number of sub-watersheds with (M)oderate or (H)igh ratings for each point source category (Table 5b).

Category	% Urban	Development	Septic tank failure
Moderate	1	4	0
High	0	0	0

Historical data/studies: Assessments have been conducted recently within all 5 sub-watersheds (Table 8b). Intensive assessment data has been collected in conjunction with ADEM's §303(d) Monitoring Program (Appendix F-2). Ten stations have been evaluated as part of ADEM's 1996 Clean Water Strategy Project (Appendix F-4) and ALAMAP Program (Appendix F-3). A summary of each of these studies, including lead agency, project objectives, data collected, and applicable quality assurance manuals in the appendices.

Assessments conducted during the SE Alabama NPS Screening Assessment: An assessment was not conducted within the CU during the SE Alabama NPS Screening Assessment.

Sub-watershed summaries: Historical monitoring data were used to provide a comprehensive assessment. A summary of the information available for all sub-watersheds is provided. Each summary discusses land use, NPS impairment potential, assessments conducted within the sub-watershed, and NPS priority rating based on available data. The summaries point out significant data and reference appropriate tables and appendices. Assessments of habitat, and chemical conditions are based on long-term data from ADEM's Ecoregional Reference Site Program. Tables referenced in the summaries are located at the end of Section II. Appendices are located at the end of this report.

Sub-watershed assessments: Chemical/physical data were monitored at 7 stations located along the Conecuh River (Appendix F-4). These data supported the inclusion of 2 segments of the River on ADEM's §303(d) list of impaired waters (Table 11b).

NPS priority sub-watersheds: A priority sub-watershed was not identified within the Upper Conecuh River CU.

Sub-Watershed: Conecuh River	NRCS Sub-Watershed Number 010

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
CNR07	C	1999	Conecuh River @ Pike Co. Rd. 7	186	F & W
PE10	C	1996	Conecuh River @ AL Hwy 223 south of Saco	99	F&W

Land use: The Conecuh River sub-watershed drains approximately 196 mi^2 in Bullock and Pike Counties. Land use was estimated as 84% forest, 7% cropland, and 7% pasture (Table 2b). Two current construction/stormwater authorizations have been issued in the sub-watershed (Table 9b).

NPS impairment potential: The potential for impairment from all NPS categories was estimated as *low* (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: An assessment was not conducted within the sub-watershed during the SE Alabama NPS Screening Assessment. The Conecuh River was monitored at one station (CNR07) in conjunction with ADEM's 1999 CWA §303(d) Monitoring Program (Appendix F-2). One stream segment was evaluated in 1996 as part of ADEM's CWS sampling efforts (Appendix F-4). Complete station descriptions are provided in Appendix E-1.

Sub-Watershed: Mannings Creek	NRCS Sub-Watershed Number 020

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
CNR06	C	1999	Conecuh River @ Pike Co. Rd. 1	297	F & W
EB01U1	C, H	1997	Mannings Creek approx. 9.9 mi. us of confluence with the Conecuh River	4	F&W
EB02U1	C, H	1997	McQuagee Mill Creek approx. 6.7 mi. us of confluence of Youngblood Creek and the Conecuh River	9	F&W
EB02U2-9	C, H	1998	Double Branch approx. 1.7 mi. us of confluence with the Conecuh River	7	F&W

Land use: The Mannings Creek sub-watershed drains approximately 160 mi^2 in Bullock, Montgomery, and Pike Counties. Land use was estimated as 69% forest, 14% pasture, and 13% row crops (Table 2b). Four current construction/stormwater authorizations have been issued in the sub-watershed (Table 9b).

NPS impairment potential: There was a *moderate* potential for impairment from pasture and silvicultural sources (Table 5b). Soil erosion estimates indicated a *moderate* potential for NPS impairment. The overall potential for impairment from nonpoint sources was estimated as *moderate* (Table 5b). There was a *moderate* potential for impairment from urban development (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: An assessment was not conducted during the 1999 SE Alabama NPS Screening Assessment. Three sites within the sub-watershed were evaluated as part of ADEM's ALAMAP Program (Appendix F-3). Intensive water quality sampling was conducted at one site on the Conecuh River during ADEM's 1999

CWA §303(d) Monitoring Program (Appendix F-2). Complete station descriptions are provided in Appendix E-1.

Sub-Watershed: Conecuh River	NRCS Sub-Watershed Number 030

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
EB2U4-11	C, H	2000	Smilies Mill Creek approx. 0.5 mi. ds of Spillars Cemetery 3 mi. east of Goshen	5	F&W
CNR04	C	1999	Conecuh River @ Pike Co. Rd. 6	431	F & W
CNR05	C	1999	Conecuh River @ Pike Co. Rd. 28	382	F & W
PE11	C	1996	Conecuh River @ Pike CR 6 southwest of Goshen	382	F & W

Land use: The Conecuh River sub-watershed drains approximately 148 mi^2 in Coffee, Crenshaw, and Pike Counties. Land use was estimated as 67% forest, 17% cropland, and 10% pasture (Table 2b). Six current construction stormwater authorizations have been issued in the sub-watershed (Table 9b).

NPS impairment potential: The local SWCD estimates of animal concentrations in the sub-watershed were *moderate* (0.16 AU/Acre), with poultry being the dominant animal (Table 3b). Soil erosion estimates indicated a *low* potential for NPS impairment (3.9 tons/acre/year) mostly from gullies and dirt road erosion (Table 4b). There was a relatively *high* potential for impairment from silviculture within the sub-watershed (Table 5b). The overall potential for impairment from nonpoint sources (Table 5b) was estimated as *moderate*.

Assessments conducted during the SE Alabama NPS Screening Assessment: The Conecuh River sub-watershed was not monitored conducted during the SE Alabama NPS Screening Assessment. Intensive water quality monitoring data was collected at 2 sites on the Conecuh River in conjunction with ADEM's 1999 CWA §303(d) Monitoring Program (Appendix E-1). Conecuh River was evaluated during 1996 in conjunction with ADEM's Clean Water Strategy Project (Appendix F-4). Smilies Mill Creek was evaluated at EB2U4-11 during ADEM's 2000 ALAMAP Program (Appendix F-3). Station descriptions are provided in Appendix E-1.

Sub-Watershed: Conecuh River	NRCS Sub-Watershed Number 040

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
CNR01	C	1999	Conecuh River @ Point A Lake Dam	1273	SF & W
CNR02	C	1999	Conecuh River @ Covington CR 86	658	F & W
CNR03	C	1999	Conecuh River @ Covington CR 77	587	F & W
PE12	C	1996	Conecuh River @ Crenshaw CR 77 at Dozier	587	F & W
PE06	C	1996	Patsaliga Cr @ Covington CR 82 west of Gantt	573	F & W

Land use: The Conecuh River sub-watershed drains approximately 172 mi^2 in Covington and Crenshaw Counties. Land use was estimated to be 84% forest (Table 2b). Three current construction stormwater authorizations have been issued in the sub-watershed (Table 9b).

NPS impairment potential: Forestry activities constituted a *moderate* source of potential NPS impairment (Table 5b). The potential for impairment from other NPS categories was estimated as *low*. There was a *moderate* potential for impairment from urban development (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: Intensive water quality sampling was conducted at 3 sites on the Conecuh River in conjunction with ADEM's §303(d) Monitoring Program (Appendix F-2). A fourth location was evaluated during ADEM's 1996 Clean Water Strategy Project (Appendix F-4). Patsaliga Creek at PE06 was also evaluated during this project (Appendix F-4). Complete station descriptions are provided in Appendix E-1.

Sub-Watershed: Conecuh River	**NRCS Sub-Watershed Number 050**

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
PE13	C	1996	Conecuh R. @ Covington CR 42 southwest of Andalusia	1329	F&W
EB05A3-41	C, H	1999	Unnamed tributary to Shady Bend Cr approx. 0.25 mi. northwest of US Hwy 29	.5	F&W

Land use: The Conecuh River sub-watershed drains approximately 164 mi^2 in Conecuh, Covington, and Escambia Counties. Land use was estimated as 72% forest, 14% row crops, 8% pasture, and 4% urban (Table 2b). Three current construction/stormwater authorizations and 1 mining NPDES permit have been issued in the sub-watershed (Table 9b).

NPS impairment potential: The potential for impairment from all rural NPS categories was estimated as *low* (Table 5b). The potential for impairment from urban runoff and development was *moderate* (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: An unnamed tributary to Shady Bend Creek was evaluated during ADEM's 1999 ALAMAP Program (Appendix F-3). The Conecuh River was evaluated by ADEM in 1996 as part of the CWS sampling efforts (Appendix F-4).

Patsaliga River CU (0314-0302) Summary

Land use: The Patsaliga River CU contains 6 sub-watersheds located in 602-mi^2 area of Butler, Crenshaw, Covington, Montgomery, and Pike Counties. The CU is located within the Southern Hilly Gulf Coastal Plain (65d) and the Southern Pine Plains and Hills (65f) subecoregions of the Southeastern Plains (65) Ecoregion. The primary land use was estimated to be forest with some pasture and cropland.

Percent land cover estimated by local SWCD (ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
76%	7%	11%	0%	2%	0%	4%

NPS impairment potential: Five sub-watersheds were estimated to have a *moderate* potential for NPS impairment. Animal husbandry, pasture runoff, and forestry activities were the main NPS concerns within the sub-watershed.

Number of sub-watersheds with (M)oderate or (H)igh ratings for each NPS category (Table 5b).

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Moderate	5	3	0	0	6	0	1	0
High	0	1	0	0	0	0	3	0

Number of sub-watersheds with (M)oderate or (H)igh ratings for each point source category (Table 5b).

Category	% Urban	Development	Septic tank failure
Moderate	1	1	0
High	0	0	0

Historical data/studies: Assessments have been conducted recently within the Olustee Creek (010), Upper Patsaliga Creek (030), and Lower Patsaliga Creek (050) sub-watersheds (Table 8b). Intensive, long-term monitoring data has been collected at 1 station in conjunction with ADEM's Ecoregional Reference Site Program (Tables 6d and 7d, Appendix F-1). Six additional stations have been evaluated in conjunction with ADEM's 1996 Clean Water Strategy Project (Appendix F-4) and ALAMAP Program (Appendix F-3). A summary of each of these studies, including lead agency, project objectives, data collected, and applicable quality assurance manuals in the appendices.

Assessments conducted during the SE Alabama NPS Screening Assessment: Four locations within 3 sub-watersheds were assessed during the SE Alabama NPS Screening Assessment (Table 10b).

Sub-watershed summaries: Current and historical monitoring data were used to provide a comprehensive assessment. A summary of the information available for all sub-watersheds is provided. They discuss land use, NPS impairment potential, assessments conducted within the sub-watershed, and NPS priority rating based on available data. They point out significant data and reference appropriate tables and appendices. Assessments of habitat, biological, and chemical conditions are based on long-term data from ADEM's Ecoregional Reference Site Program. Tables referenced in the summaries are located at the end of Section II. Appendices are located at the end of this report.

Sub-watershed assessments: Habitat, chemical/physical, and biological indicators of water quality were monitored at 5 stations in 3 sub-watersheds (Table 12b). Habitat quality was generally

assessed as *excellent* or *good* (Table 6b). However, the macroinvertebrate community was assessed as *fair* at all 5 stations (Table 7b). Fish IBI assessments conducted at 4 of these locations indicated the fish community to be in *fair* or *poor* condition (Table 7b).

The overall condition was rated as the lowest assessment result obtained (Table 12b). Three stations were rated as *fair* and 2 stations were rated as *poor*.

NPS Priority sub-watersheds: A sub-watershed was recommended for NPS priority status if the macroinvertebrate or fish communities were assessed as *fair* or *poor*. Bioassessment results indicated biological impairment at 5 stations located within 3 sub-watersheds (Table 12b). These sub-watersheds were recommended for priority status (Table 13b).

Sub-Watershed: Olustee Creek	NRCS Sub-Watershed Number 010

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
EB08U3-15	C, H	1999	Patsaliga Cr approx. 0.75 mi. east of unnamed Crenshaw CR near Petrey	122	F&W

Land use: The Olustee Creek sub-watershed drains approximately 135 mi^2 in Crenshaw, Montgomery, and Pike Counties. According to SWCD estimates, forest and pasture comprised 89% of the sub-watershed (Table 2b). Two current construction/stormwater authorizations and two semi-public/private NPDES permits have been issued in the sub-watershed (Table 9b).

NPS impairment potential: The overall potential for impairment from nonpoint sources was estimated as *moderate* (Table 5b). The main NPS concerns within the sub-watershed were livestock and pasture runoff (Table 5b).

***Assessments conducted during the SE Alabama NPS Screening Assessment*:** An assessment was not conducted within the sub-watershed during the SE Alabama NPS Screening Assessment. Patsaliga Creek was evaluated at one reach as part of ADEM's ALAMAP Program (Appendix F-3). Complete station descriptions are provided in Appendix E-1.

Sub-Watershed: Blue Creek	NRCS Sub-Watershed Number 020

Land use: The Blue Creek sub-watershed drains approximately 61 mi^2 in Crenshaw and Montgomery Counties. The sub-watershed was mainly forest with some pasture areas (Table 2b). One current construction/stormwater authorization has been issued in the sub-watershed (Table 9b).

NPS impairment potential: The overall potential for impairment from nonpoint sources was estimated as *moderate* (Table 5b). The main NPS concerns within the sub-watershed were animal husbandry, silviculture, and pasture runoff.

Assessments conducted during the SE Alabama NPS Screening Assessment: An assessment was not conducted within the sub-watershed during the SE Alabama NPS Screening Assessment.

Sub-Watershed: Upper Patsaliga Creek	NRCS Sub-Watershed Number 030

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
PDCC-1	C, H, M, F	1999	Pond Creek @ unnamed Crenshaw CR E. of Vernladge	14	F&W
EB03U2-21	C, H	1998	Patsaliga Creek approx. 5.3 mi. us of confluence with Little Patsaliga Creek	264	F&W
PE04	C	1996	Patsaliga Creek @ Crenshaw CR 59	211	F&W

Land use: The Upper Patsaliga Creek sub-watershed drains approximately 84 mi^2 in Crenshaw and Pike Counties. Land use was estimated as 69% forest, 10% pasture, 8% row crops, 8% urban, and 5% other land uses (Table 2b). Three current construction/stormwater authorizations have been issued in the sub-watershed (Table 9b).

NPS impairment potential: The overall potential for impairment from nonpoint sources was estimated as *moderate* (Table 5b). The main NPS concerns within the sub-watershed were animal husbandry, silviculture, and pasture runoff. There was a *moderate* potential for impairment from urban runoff and development (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: Pond Creek was assessed at one location during the SE Alabama NPS Screening Assessment (Table 10b). Two locations on Patsaliga Creek have been previously evaluated in conjunction with ADEM's 1996 Clean Water Strategy Project (Appendix F-4) and ADEM's 1998 ALAMAP Program (Appendix F-3). Complete station descriptions are provided in Appendix E-1.

Pond Creek: At PDCC-1, Pond Creek is a low-gradient stream characterized by sand (~60%) and detritus (~35%) substrates (Table 6b). Habitat quality was assessed as *excellent* using the glide/pool assessment matrix (Table 6b). Eight EPT families were collected indicating a *fair* aquatic macroinvertebrate community (Table 7b). The fish assessment conducted in July of 1999 indicated a *poor* fish community (Table 7b).

The water quality data indicated that the concentration of nitrate-nitrite nitrogen was elevated (0.22 mg/L) during the July of 1999 sampling event (Appendix D-1).

NPS priority status: Upper Patsaliga Creek was identified as a priority sub-watershed due to potential nutrient enrichment problems and poor biological conditions within the sub-watershed (Tables 12b and 13b).

Sub-Watershed: Little Patsaliga Creek	**NRCS Sub-Watershed Number 040**

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
CECC-1	C, H, M	1999	Cane Creek @ Crenshaw Co. Rd. 11	14	F&W
LPCC-4	C, H, M, F	1999	Little Patsaliga Creek at Crenshaw Co. Rd. 68	20	F&W

Land use: The Little Patsaliga Creek sub-watershed drains approximately 106 mi^2 in Crenshaw County. Local SWCD land use estimates were 66% forest, 16% pasture, 11% row crops, 5% wetlands, and 2% urban (Table 2b). One current construction/stormwater authorization has been issued in the sub-watershed (Table 9b).

NPS impairment potential: The overall potential for impairment from nonpoint sources was estimated as *moderate* (Table 5b). Impairment potential from animal husbandry and silvicultural activities were estimated as *high*. Impairment potential from pasture runoff was estimated as *moderate* (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: Little Patsaliga Creek and Cane Creek were assessed during the SE Alabama NPS Screening Assessment (Table 10b). Complete station descriptions are provided in Appendix E-1.

Cane Creek: Cane Creek at CECC-1 is a low-gradient stream located in the Southern Hilly Gulf Coastal Plain (65d) subecoregion (Table 6b). Substrates were a mixture of sand, clay, and detritus (Table 6b). Habitat quality was assessed as *excellent* using the glide/pool assessment matrix (Table 6b). Six EPT families were collected indicating a *fair* aquatic macroinvertebrate community (Table 7b). Results of water quality sampling are provided in Appendices D-1 and D-2.

Little Patsaliga Creek: Little Patsaliga Creek at LPCC-4 is also a low-gradient stream located in the Southern Hilly Gulf Coastal Plain subecoregion. Bottom substrates were dominated by sand (83%), suggesting sedimentation to be a potential source of impairment (Table 6b). Habitat quality was assessed as *good* using the glide/pool assessment matrix (Table 6b). Five EPT families were collected indicating a *fair* aquatic macroinvertebrate community (Table 7b). Results of the fish IBI assessment indicated the fish community to be in *poor* condition (Table 7b). Results of water quality sampling are provided in Appendices D-1 and D-2.

NPS priority status: Biological assessments indicated impaired macroinvertebrate and fish communities at both Cane Creek and Little Patsaliga Creek (Table 12b). Little Patsaliga Creek was identified as a priority sub-watershed (Table 13b). Habitat assessments completed at LPCC-4 suggest sedimentation to be a possible source of impairment. SWCD estimates indicated animal husbandry, silvicultural activities, and pasture runoff to be NPS concerns within the sub-watershed.

Sub-Watershed: Lower Patsaliga Creek	**NRCS Sub-Watershed Number 050**

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
UPCC-1	C, H, M, F	1999	Unnamed Trib. of Patsaliga Cr @ Covington CR 23	12	F&W
PYW-1	C, H, M, F	1999	Pineywoods Cr unnamed Crenshaw CR	29	F&W
EB03U1	C, H	1997	Patsaliga Cr approx. 9.4 mi. us of confluence with Buck Cr	490	F&W
PE05	C	1996	Patsaliga Cr @ AL Hwy 106 southwest of Luverne	442	F&W
EB04U1	C, H	1997	Tributary to Patsaliga Cr approx. 0.1 mi. us of confluence with Patsaliga Cr		F&W

Land use: The Lower Patsaliga Creek sub-watershed drains approximately 196 mi^2 in Butler, Covington, and Crenshaw Counties. SWCD estimated land use in this sub-watershed as 86% forest, 7% row crops, and 6% pasture (Table 2b). Two current construction/stormwater authorizations have been issued in the sub-watershed (Table 9b).

NPS impairment potential: Impairment potential from silviculture and pasture runoff was estimated as *moderate* (Table 5b). The overall potential for impairment from nonpoint sources was estimated as *moderate* (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: An unnamed tributary of Patsaliga Creek was monitored during the SE Alabama NPS Screening Assessment (Table 10b). Since 1991, ADEM has sampled Pineywoods Creek at PYW-1 as a least-impaired, ecoregional reference site for this sub-ecoregion (Appendix E-1). Patsaliga Creek has been evaluated at 2 locations in conjunction with ADEM's 1997 ALAMAP Program (Appendix F-3) and 1996 Clean Water Strategy Project (Appendix F-4).

Unnamed tributary to Patsaliga Creek: The unnamed tributary to Patsaliga Creek at the UPCC-1 is a low-gradient, sandy-bottomed stream located in Southern Hilly Gulf Coastal Plain (65d) subecoregion (Table 6b). Habitat quality was assessed as *good* (Table 6b). Bioassessments conducted at the site indicated both the macroinvertebrate and fish communities to be in *fair*

condition (Table 7b). Water quality sampling did not indicate a cause for the impairment (Appendices D-1 and D-2).

Pineywoods Creek: Pineywoods at PYW-1 is a low-gradient stream typical of Southeastern Plains and Hills (65e) subecoregion (Table 6b). Habitat quality at the site is generally assessed as *excellent* (Table 6b). However, bioassessments conducted at the site indicated both the macroinvertebrate and fish communities to be in *fair* condition (Table 7b). Nitrogen concentrations (TKN) were slightly elevated during the June of 1999 sampling event (Appendix F-1). Sedimentation has also been noted to be a problem at the site.

NPS priority status: Assessment results indicated biological impairment at both the unnamed tributary to Patsaliga Creek and Pineywoods Creek (Table 12b), identifying Lower Patsaliga Creek as priority sub-watershed (Table 13a). Water quality sampling did not suggest a cause of the impairment. However, site visits suggested possible sedimentation problems and SWCD land use information indicated silviculture and pasture runoff to be nonpoint source concerns within the sub-watershed.

Sub-Watershed: Buck Creek	**NRCS Sub-Watershed Number 060**

Land use: The Buck Creek sub-watershed drains approximately 21 mi^2 in Covington County. Land use was estimated as 75% forest, 13% cropland, and 9% pasture (Table 2b). One current construction/stormwater authorization and one semi-public/private NPDES permit have been issued in the sub-watershed (Table 9b).

NPS impairment potential: The potential for NPS impairment from pasture runoff was estimated as *moderate* (Table 4b). The overall potential for impairment from nonpoint sources was estimated as *low* (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: An assessment has not been conducted within the Buck Creek sub-watershed. However, the overall potential for NPS impairment was estimated to be *low*.

Sepulga River CU (0314-0303) Summary

Land use: The Sepulga River CU contains 7 sub-watersheds located within a 1,049-mi^2 area of Butler, Conecuh, Crenshaw, Covington, Escambia, Lowndes, and Monroe Counties. The CU is located in the Southern Hilly Gulf Coastal Plain (65d), Southern Pine Plains and Hills (65f), Southeastern Floodplains and Low Terraces (65p), and Burhstone/ Lime Hills (65q) subecoregions. The primary land use was forest with some pasture and cropland. An 8-mile segment of Rocky Creek, located within the Lower Persimmon Creek (030) sub-watershed is currently on ADEM's 2000 CWA §303(d) list of impaired waterbodies (Table 11b). The cause and source of impairment are currently unknown.

Percent land cover estimated by local SWCD (ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
84%	6%	7%	0%	2%	0%	1%

NPS impairment potential: Three sub-watersheds were estimated to have a *moderate* potential for impairment from nonpoint sources. The main NPS concerns were animal husbandry, pasture runoff, and forestry activities. Impairment from urban runoff and development was a concern within 2 sub-watersheds. Two sites were estimated to have a low potential for impairment from all rural and urban NPS categories (010 and 030) (Table 5b).

Number of sub-watersheds with (M)oderate or (H)igh ratings for each NPS category (Table 5b).

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Moderate	3	3	0	0	3	0	2	0
High	0	0	0	0	0	0	0	0

Number of sub-watersheds with (M)oderate or (H)igh ratings for each point source category (Table 5b).

Category	% Urban	Development	Septic tank failure
Moderate	0	2	0
High	1	0	0

Historical data/studies: Assessments have been conducted recently in 6 of the 7 sub-watersheds within the CU (Table 8b). Four stations located within the Lower Persimmon Creek (030) sub-watershed were monitored intensively in support of ADEM's §303(d) Monitoring Program (Tables 6d and 7d, Appendix F-2). Ten additional stations were evaluated in conjunction with ADEM's 1996 Clean Water Strategy Project (Appendix F-4) and ALAMAP Program (Appendix F-3). Station descriptions are provided in Appendix E-1.

Assessments conducted during the SE Alabama NPS Screening Assessment: No sub-watersheds were selected for assessment during the SE Alabama NPS Screening Assessment.

Sub-watershed summaries: Historical monitoring data were used to provide a comprehensive assessment. A summary of the information available for all sub-watersheds is provided. Each summary discusses land use, NPS impairment potential, assessments conducted within the sub-watershed, and NPS priority rating based on available data. The summaries point out significant data and reference appropriate tables and appendices. Assessments of habitat, biological, and chemical conditions are based on long-term data from ADEM's Ecoregional Reference Site Program (ADEM 2000a). Tables referenced in the summaries are located at the end of Section II. Appendices are located at the end of this report.

Sub-watershed assessments: Habitat, chemical/physical, and biological indicators of water quality were monitored at 1 station on Rocky Creek in the Lower Persimmon Creek sub-watershed (030) (Table 12b). Habitat quality was assessed as *excellent* (Table 6b). Results of the macroinvertebrate assessment indicated the macroinvertebrate community to be in *poor* condition (Table 7b).

The overall condition was rated as the lowest assessment result obtained (Table 12b). One station was rated as *poor* due to the *poor* condition of the macroinvertebrate community. Intensive water quality data collected at 3 stations along Rocky Creek indicated nutrient enrichment and pathogens to be possible causes of the impairment (Appendix F-2).

NPS priority status: Assessment results indicated impaired biological conditions within the Lower Persimmon Creek sub-watershed (Table 12b). These results support the inclusion of this segment of Rocky Creek on ADEM's CWA §303(d) list of impaired waterbodies. It is not recommended as a NPS priority waterbody, however, because of potential urban impairment from Georgiana.

Sub-Watershed: Sepulga River	NRCS Sub-Watershed Number 010

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
EB05U2-52	C, H	1998	Tributary to Duck Cr. approx. 0.4 mi. us of confluence with Duck Cr.	23	F&W

Land use: The Sepulga River sub-watershed drains approximately 171 mi^2 in Butler, Conecuh, and Monroe Counties. Land use within the sub-watershed was mainly forest (94%) (Table 2b). One current construction/stormwater authorization has been issued in the sub-watershed (Table 9b).

NPS impairment potential: The potential for impairment from all NPS categories was estimated as *low* (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: An assessment was not conducted within the sub-watershed during the SE Alabama NPS Screening Assessment. However, one site has been evaluated as part of the ADEM's ALAMAP Program (Appendix F-3).

Sub-Watershed: Upper Persimmon Creek	NRCS Sub-Watershed Number 020

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
EB01U2-40	C, H	1998	Tributary to Persimmon Cr approx. 1.6 mi. us of confluence with Persimmon Cr	1	F&W

Land use: The Upper Persimmon Creek sub-watershed drains approximately 88 mi^2 in Butler County. Land use was estimated as 58% forest, 20% urban, 12% pasture, and 9% row crops (Table 2b). Four current construction/stormwater authorizations and 9 industrial wastewater NPDES permits were issued in the sub-watershed (Table 9b).

NPS impairment potential: The overall potential for impairment from nonpoint sources was estimated as *moderate* (Table 5b). The main NPS concerns within the sub-watershed were animal husbandry and pasture runoff. Potential impairment from urban runoff and development were also concerns (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: The sub-watershed was not assessed during the SE Alabama NPS Screening Assessment. However, a tributary to Persimmon Creek has been evaluated at 1 location in conjunction with ADEM's 1998 ALAMAP Program (Appendix F-3). A complete station description is provided in Appendix E-1.

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Sub-Watershed: Lower Persimmon Creek	NRCS Sub-Watershed Number 030

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
RYC-1	C	1999	Persimmon Cr @ Butler CR 9		F&W
RYC-2	C, H, M	1999	Rocky Cr @ Butler CR 16	49	F&W
RYC-3	C	1999	Rocky Cr @ US Hwy 31	44	F&W
RYC-4	C	1999	Rocky Cr @ Butler CR 37	40	F&W
EB04U2-45	C, H	1998	Tributary to Rocky CR approx. 1.7 mi. us of confluence with Rocky Cr	.5	F&W
EB5U4-30	C, H	2000	Deep Step Cr	5	F&W

Land use: The Lower Persimmon Creek sub-watershed drains approximately 193 mi^2 in Butler and Conecuh Counties. According to SWCD land use estimates, 90% of the sub-watershed is forested (Table 2b). Two current construction/stormwater authorizations, and 10 industrial wastewater NPDES permits have been issued in the sub-watershed (Table 9b). An 8-mile section of Rocky Creek is currently on ADEM's CWA §303(d) list of impaired waterbodies for not meeting its Fish and Wildlife water use classification (ADEM 2000c). It is listed as impaired by unknown toxicity from unknown sources.

NPS impairment potential: The potential for impairment from all NPS categories was estimated as *low* (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment Lower Persimmon Creek was not assessed during the SE Alabama NPS Screening Assessment. However, four locations on Persimmon Creek and Rocky Creek have been monitored as part of ADEM's CWA §303(d) Monitoring Program (Appendix F-2). In 1998, one site was assessed as part of ADEM's ALAMAP Program (Appendix F-3). Station descriptions are provided in Appendix E-1.

Rocky Creek: At RYC-2, Rocky Creek is a low-gradient, sandy-bottomed stream located in the Southern Hilly Gulf Coastal Plain (65d) subecoregion (Table 6b). Habitat quality was assessed as *excellent* using the glide/pool assessment matrix (Table 6b). Four EPT families were collected indicating a *poor* aquatic macroinvertebrate community (Table 7b).

Intensive water quality data was collected at RYC-2, RYC-3, and RYC-4 from May through September of 1999 (Appendix F-2). Concentrations of total phosphorus (TP) and total Kjeldahl nitrogen (TKN) were slightly elevated at RYC-2 during April. Low flow prevented sample collection during June through September. Total Kjeldahl nitrogen concentrations were elevated at RYC-3 and RYC-4 during June. Fecal coliform concentrations of greater than 5000 colonies per 100 mL of sample were measured during July.

NPS priority status: Assessment results indicated impaired biological conditions at RYC-2 (Table 12b). Water quality monitoring indicated nutrient enrichment at 3 sites on Rocky Creek and a high concentration of pathogens at 2 sites. These results support the inclusion of this segment of Rocky Creek on ADEM's CWA §303(d) list. It is not recommended as a NPS priority waterbody, however, because of potential urban impairment from Georgiana.

Sub-Watershed: Sepulga River	NRCS Sub-Watershed Number 040

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
PE17	C	1996	Sepulga R. @ US Hwy 31	470	F&W
EB4U4-19	C, H	2000	Tributary to Sepulga River approx. 0.5 mi. ds of Conecuh CR 47	.5	F&W

Land use: The Sepulga River sub-watershed drains approximately 104 mi^2 in Butler, Conecuh, and Crenshaw Counties. SWCD land use estimates for this sub-watershed were 84% forest, 7% pasture, and 7% row crops (Table 2b). Two current construction/stormwater authorizations have been issued in the sub-watershed (Table 9b).

NPS impairment potential: Potential for NPS impairment from silvicultural sources was *moderate* (Table 5b). The potential for impairment from all other NPS categories was estimated as *low* (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: An assessment was not conducted within the sub-watershed during the SE Alabama NPS Screening Assessment. Sepulga River was evaluated at 1 location in 1996 as part of ADEM's Clean Water Strategy Project (Appendix F-4). An unnamed tributary to the Sepulga River was evaluated during 2000 in conjunction with ADEM's ALAMAP Program (Appendix F-3). Station locations are provided in Appendix E-1.

Sub-Watershed: Upper Pigeon Creek	NRCS Sub-Watershed Number 050

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
EB06U3-46	C, H	1999	Fayette Branch approx. 0.25 mi. south of Crenshaw CR near Rock Hill Church	.5	F&W

Land use: The Upper Pigeon Creek sub-watershed drains approximately 217 mi^2 in Butler, Crenshaw, and Lowndes Counties. Land use was estimated as 81% forest, 10% pasture, and 6% cropland (Table 2b). Four current construction/stormwater authorizations have been issued in the sub-watershed (Table 9b).

NPS impairment potential: The local SWCD estimates of animal concentrations and percent pasture land use indicated *moderate* impairment potentials (Table 5b). The overall potential for impairment from nonpoint sources was estimated as *moderate*. There was a *moderate* potential for impairment from urban development (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: Fayette Branch was evaluated at 1 location during ADEM's 1999 ALAMAP Program (Appendix F-3). Complete station descriptions are provided in Appendix E-1.

Sub-Watershed: Lower Pigeon Creek	NRCS Sub-Watershed Number 060

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
EB04U3-23	C, H	1999	Pigeon Cr. approx. 0.5 mi. ds of US Hwy 84	352	F&W
EB6U4-43	C, H	2000	Tributary to Hard Labor Cr. directly us of confluence with Hard Labor Cr.	2	F&W

Land use: The Lower Pigeon Creek sub-watershed drains approximately 135 mi^2 in Butler Conecuh, and Covington Counties. SWCD land use estimates for this sub-watershed were 78% forest, 10% pasture, and 10% row crops (Table 2b). Two current construction/stormwater authorizations and 1 municipal NPDES permit have been issued in the sub-watershed (Table 9b).

NPS impairment potential: The local SWCD estimates of animal concentrations and percent pasture land use indicated *moderate* impairment potentials from animal sources and pasture runoff (Table 5b). The overall potential for impairment from nonpoint sources was estimated as *moderate* (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: Two locations have been evaluated within the sub-watershed in conjunction with ADEM's ALAMAP Program (Appendix F-3). Station locations are provided in Appendix E-1.

Sub-Watershed: Sepulga River	NRCS Sub-Watershed Number 070

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
PE-18	C	1996	Sepulga R. @ Conecuh CR 42	1016	F&W

Land use: The Sepulga River sub-watershed drains approximately 141 mi^2 in Conecuh, Covington, and Escambia Counties. The sub-watershed was estimated to be 91% forest (Table 2b). Two current construction/stormwater authorizations and 1 mining NPDES permit have been issued in the sub-watershed (Table 9b).

NPS impairment potential: The potential for impairment from silviculture was estimated as *moderate* (Table 5b). The overall potential for impairment from nonpoint sources was estimated as *low* (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: The Sepulga River sub-watershed was not assessed during the SE Alabama NPS Screening Assessment. Sepulga River was evaluated at 1 reach during ADEM's Clean Water Strategy Project (Appendix F-4).

Lower Conecuh River CU (0314-0304) Summary

Land use: The Lower Conecuh River CU contains 8 sub-watersheds in a 996-mi^2 area of Conecuh, Escambia, and Monroe Counties. The CU is located in the Southern Pine Plains and Hills (65f) and Southeastern Floodplains and Low Terraces (65p) subecoregions. The primary land use was forest with some row crop.

Percent land cover estimated by local SWCD (ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
88%	5%	3%	<1%	2%	0%	1%

NPS impairment potential: Two sub-watersheds were estimated to have a *moderate* potential for impairment from nonpoint sources. Mining, aquaculture, and forestry were concerns within the CU. Impairment from urban runoff and development was a concern within 3 sub-watersheds. The potential for impairment from all rural and urban NPS categories was *low* in 1 sub-watershed (040) (Table 5b).

Number of sub-watersheds with (M)oderate or (H)igh ratings for each NPS category (Table 5b).

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Moderate	2	0	0	0	0	2	1	0
High	0	0	1	0	0	1	0	0

Number of sub-watersheds with (M)oderate or (H)igh ratings for each point source category (Table 5b).

Category	% Urban	Development	Septic tank failure
Moderate	2	4	0
High	1	0	0

Historical data/studies: Assessments have been conducted recently within 5 of the 8 sub-watersheds (Table 8b). Burnt Corn Creek (050) and Little Escambia Creek (090) have been intensively monitored in conjunction with ADEM's CWA §303(d) Monitoring Program (Tables 6b and 7b, Appendix F-2). Twelve stations have been evaluated in conjunction with ADEM's 1996 Clean Water Strategy Project (Appendix F-4) and ALAMAP Program (Appendix F-3). A summary of each of these studies, including lead agency, project objectives, data collected, and applicable quality assurance manuals in the appendices.

Assessments conducted during the SE Alabama NPS Screening Assessment: Ten stations located within 3 sub-watersheds (010, 030,and 090) were assessed during the SE Alabama NPS Screening Assessment (Table 10b).

Sub-watershed summaries: Historical and current monitoring data were used to provide a comprehensive assessment. A summary of the information available for all sub-watersheds is provided. Each summary discusses land use, NPS impairment potential, assessments conducted within the sub-watershed, and NPS priority rating based on available data. The summaries point out significant data and reference appropriate tables and appendices. Assessments of habitat, biological, and chemical conditions are based on long-term data from ADEM's Ecoregional Reference Site Program. Tables referenced in the summaries are located at the end of Section II. Appendices are located at the end of this report.

Sub-watershed assessments: Habitat, chemical/physical, and biological indicators of water quality were monitored at 12 stations in 4 sub-watersheds (Table 12b). Habitat quality was assessed as

excellent at all 12 sites. Assessment results indicated the macroinvertebrate community to be in *excellent* or *good* condition at 4 (25%) stations, *fair* at 6 (50%) stations, and *poor* at 2 (13%) stations. Fish IBI assessments conducted at 7 stations indicated the fish community to be in *poor* or *very poor* condition at 6 (86%) stations and *fair* (14%) condition at 1 station.

Overall condition was rated as the lowest assessment result obtained (Table 12b). Eight stations were rated as *fair* or *poor* (66%). The remaining 4 stations were rated as *good* (33%).

NPS Priority Sub-watersheds: A sub-watershed was recommended for NPS priority status if the macroinvertebrate or fish community was assessed as *fair* or *poor*. Assessment results indicated biological impairment within 3 sub-watersheds (010, 090). However, the Lower Murder Creek (030) sub-watershed is primarily impaired by urban sources. The Conecuh River (010) and Little Escambia Creek (090) sub-watersheds are recommended for priority status (Table 13b).

Sub-Watershed: Conecuh River	NRCS Sub-Watershed Number 010

Station	Assessment Type	Date	Location	Area (mi2)	Class.
FYCE-1	C, H, M, F	1999	Folley Creek at Escambia CR 53	3	F&W
MMCE-1	C, H, M, F	1999	Maye Mill Creek at unnamed Escambia CR	8	F&W
SSCE-1	C, H, M, F	1999	Silas Creek at Escambia CR 4	24	F&W
MYCE-1	C, H, M	1999	Maye Creek at US Hwy 29	4	F&W
MHCE-1	C, H, M	1999	Menden Hall Creek at Escambia CR 53	9	F&W
SHCE-1	C, H, M	1999	Smith Creek at US Hwy 29	9	F&W
EB3U4-15	C, H	2000	Unnamed tributary to Maye Mill Cr.	1	F&W
EB1U4-1	C, H	2000	Unnamed tributary to the Conecuh R.	1-2	F&W
EB02U3-1	C, H	1999	Tributary to Conecuh R. approx. 0.3 mi. us of confluence with Conecuh R.	1.2	F&W
EB03U3-8	C, H	1999	Poley Cr. approx. 0.5 mi. ds of Escambia CR 53	5	F&W
EB08U2-1	C, H	1998	Tributary to Conecuh R. approx. 0.1 mi. us of confluence with Conecuh R.	2	F&W
EB01A1	C, H	1997	Crossway Cr. approx. 4.6 mi. us of confluence with Conecuh R.	3	F&W
EB05U1	C, H	1997	Tributary to Conecuh R. approx. 0.3 mi. us of confluence with Conecuh R.		F&W
EB06U1	C, H	1997	Conecuh R. <0.1 mi. ds of unnamed CR	3275	F&W
PE14	C	1996	Conecuh R. @ AL Hwy 41	2624	F&W

Land use: The Conecuh River sub-watershed drains approximately 197 mi^2 in Escambia County. The sub-watershed was estimated to be 91% forested (Table 2b). Three current construction/stormwater authorizations were issued in the sub-watershed (Table 9b).

NPS impairment potential: The potential for impairment from aquaculture was estimated as *high* (Table 5b). The overall potential for impairment from nonpoint sources was estimated as *low*. There was a *moderate* potential for impairment from urban development (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: Six stations located on six streams were monitored in conjunction with the SE Alabama NPS Screening Assessment (Table 10b). Seven additional locations have been evaluated in conjunction with ADEM's ALAMAP Program (Appendix F-3). One stream segment was monitored in 1996 as part of ADEM's Clean Water Strategy Project (Appendix F-4). Complete station descriptions are provided in Appendix E-1.

Folley Creek: At FYCE-1, Folley Creek is a low-gradient, sandy-bottomed stream located in the Southern Pine Plains and Hills (65f) subecoregion (Table 6b). Habitat quality was assessed as *excellent* (Table 6b). Four EPT families were collected indicating a *poor* aquatic macroinvertebrate community (Table 7b). The fish assessment indicated a *very poor* fish community (Table 7b). Water chemistry samples collected in July of 1999 indicated slightly

elevated turbidity and total suspended solids, suggesting sedimentation as a potential source of impairment (Appendix D-1). The concentration of total phosphate-phosphorus was also slightly elevated (Appendix D-1).

Maye Mill Creek: Maye Mill Creek at MMCE-1 is a low-gradient stream, characterized by sand substrates (~90%) (Table 6b). Habitat quality was assessed as *excellent* using the glide/pool assessment matrix (Table 6b). Four EPT families were collected indicating a *poor* aquatic macroinvertebrate community (Table 7b). The fish assessment indicated a *very-poor* fish community (Table 7b). Water chemistry samples collected in July of 1999 did not detect impairment (Appendices D-1 and D-2).

Menden Hall Creek: Menden Hall Creek is located in the Southern Pine Plains and Hills (65f) subecoregion. Unlike other stream reaches in this subecoregion, Menden Hall Creek at MHCE-1 is characterized by gravel riffles (Table 6b). Habitat quality was assessed as *excellent* using the riffle/run assessment matrix (Table 6b). Seven EPT families were collected indicating a *fair* aquatic macroinvertebrate community (Table 7b). Water quality data is provided in Appendices D-1 and D-2.

Maye Creek: At MYCE-1, Maye Creek is a low-gradient stream characterized by silt and clay substrates (Table 6b). Habitat quality was assessed as *excellent* using the glide/pool assessment matrix (Table 6b). Five EPT families were collected indicating a *fair* aquatic macroinvertebrate community (Table 7b). Results of chemical sampling conducted in July are provide in Appendices D-1 and D-2.

Silas Creek: At SSCE-1, Silas Creek is a sand-bottomed, low-gradient stream located in the Southern Pine Plains and Hills (65f) subecoregion (Table 6b). Habitat quality was assessed as *excellent* using the glide/pool assessment matrix (Table 6b). Four EPT families were collected indicating a *poor* aquatic macroinvertebrate community (Table 7b). The fish assessment indicated a *very-poor* fish community (Table 7b). Water chemistry samples collected in July of 1999 did not suggest a cause for impairment (Appendices D-1 and D-2).

Smith Creek: Smith Creek at SHCE-1 had a mostly-shaded canopy and was dominated by sand (~50%), with lesser amounts of detritus (~25%), gravel (~20%), and silt (~5%) substrates (Table 6b). Habitat quality was assessed as *excellent* using the glide/pool assessment matrix (Table 6b). Nine EPT families were collected, indicating a *good* aquatic macroinvertebrate community (Table 7b). Water quality data is provided in Appendices D-1 and D-2.

NPS priority status: Biological impairment was detected at reaches located on Folley Creek, Maye Mill Creek, Menden Hall Creek, Maye Creek, and Silas Creek (Table 12b), which identified the Conecuh River (010) as a priority sub-watershed (Table 13a). Water quality sampling suggested sedimentation and nutrient enrichment as potential causes for the impairment detected at Folley Creek. Aquaculture and urban development were identified as concerns within the sub-watershed based on SWCD information.

Sub-Watershed: Upper Murder Creek	NRCS Sub-Watershed Number 020

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
EB7U4-47	C, H	2000	Unnamed tributary to Murder Cr. approx. 200 m us of AL Hwy 83	0.5	F&W

Land use: The Upper Murder Creek sub-watershed drains approximately 220 mi^2 in Conecuh and Monroe Counties. Land use was estimated as 89% forest and 6% row crops (Table 2b). Three current construction/stormwater authorizations have been issued in the sub-watershed (Table 9b).

NPS impairment potential: There was a *moderate* potential for impairment from silviculture (Table 5b). The overall potential for impairment from nonpoint sources was estimated as *low*. The potential for impairment from urban development was estimated as *moderate* (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: Upper Murder Creek was not assessed during the SE Alabama NPS Screening Assessment. An unnamed tributary to Murder Creek has been evaluated in conjunction with ADEM's ALAMAP Program (Appendix F-3).

Sub-Watershed: Lower Murder Creek	NRCS Sub-Watershed Number 030

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
JNCC-1	C, H, M, F	1999	Jordan Creek at AL Hwy 31	9	F&W
PRCC-2	C, H, M, F	1999	Panther Creek at Conecuh Co. Rd. 17	13	F&W
PRCC-3	C, H, M, F	1999	Panther Creek at AL Hwy 31	28	F&W
EB01U3-28	C, H	1999	Tributary to Murder Cr. approx. 2 mi. us of confluence with Murder Cr.	2	F&W

Land use: The Lower Murder Creek sub-watershed drains approximately 129 mi^2 in Conecuh and Escambia Counties. Land use was primarily forest mixed with some cropland, urban areas, and pasture (Table 2b). Three current construction/stormwater authorizations and 2 semi-public/private NPDES permits have been issued in the sub-watershed (Table 9b).

NPS impairment potential: The potential for impairment from all rural NPS categories was *low* (Table 5b). There was a *moderate* potential for impairment from urban runoff and development (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: Three sites located on Jordan Creek and Panther Creek were monitored during the SE Alabama NPS Screening Assessment (Table 10b). A tributary to Murder Creek has also been evaluated in conjunction with ADEM's ALAMAP Program (Appendix F-3).

Jordan Creek: At JNCC-1, Jordan Creek is a low-gradient stream characterized by sand and silt substrates (Table 6b). Habitat quality was assessed as *excellent* (Table 6b). Eight EPT families were collected indicating a *fair* aquatic macroinvertebrate community (Table 7b). The fish assessment indicated a *fair* fish community (Table 7b). Although turbidity was slightly elevated,

water chemistry samples did not indicate a cause of impairment to the biological communities (Appendix D-1).

Panther Creek: Panther Creek was assessed at two locations (Table 10b). At PRCC-2, Panther Creek is a low-gradient stream located in the Southern Pine Plains and Hills (65f) subecoregion (Table 6b). Substrate composition is primarily sand with some gravel and detritus (Table 6b). Habitat quality was assessed as *excellent* (Table 6b). Eight EPT families were collected indicating a *fair* aquatic macroinvertebrate community (Table 7b). The fish assessment indicated a *fair* fish community (Table 7b). Water quality sampling did not indicate a cause of impairment to the biological community (Appendices D-1 and D-2).

Panther Creek is quite different at the PRCC-3 sampling reach. Located in the Southeastern Plains and Hills (65e) subecoregion, PRCC-3 is a riffle-run reach characterized by gravel substrates (Table 6b). Habitat quality was assessed as *excellent* (Table 6b). Fourteen EPT families were collected indicating an *excellent* aquatic macroinvertebrate community (Table 7b). The fish assessment indicated a *poor* fish community (Table 7b). Water quality samples were not collected at this site.

NPS priority status: Biological impairment was detected at both Jordan Creek and Panther Creek (Table 16d). Water quality samples did not suggest a cause of impairment, but there was a moderate potential for impairment from urban runoff and development. Therefore, Lower Murder Creek is not recommended as a non-point source priority sub-watershed.

Sub-Watershed: Cedar Creek	**NRCS Sub-Watershed Number 040**

Land use: The Cedar Creek sub-watershed drains approximately 85 mi^2 in Conecuh and Escambia Counties. The sub-watershed was estimated to be 93% forest and 5% cropland (Table 2b). One current construction/stormwater authorization has been issued in the sub-watershed (Table 9b).

NPS impairment potential: The potential for impairment from all NPS categories was estimated as *low* (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: An assessment has not been conducted within the Cedar Creek sub-watershed.

Sub-Watershed: Burnt Corn Creek	**NRCS Sub-Watershed Number 050**

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
BCRE-1	C	1999	Burnt Corn Cr. @ US Hwy 31	187	F&W
BCRE-2	C, H, M	1999	Burnt Corn Creek at AL Hwy 41	182	F&W
BCRE-3	C	1999	Burnt Corn Cr. @ Escambia CR 77	162	F&W

Land use: The Burnt Corn Creek sub-watershed drains approximately 186 mi^2 in Conecuh, Escambia, and Monroe Counties. Forest was the dominant land use within the sub-watershed (Table 2b). Five current construction/stormwater authorizations and 5 mining NPDES permits have been issued in the sub-watershed (Table 9b).

NPS impairment potential: There was a *moderate* potential for NPS impairment from mining runoff. The overall potential for impairment from nonpoint sources was estimated as *low* (Table 5b). There was a *moderate* potential for impairment from urban development (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: An assessment of the sub-watershed was not conducted during the SE Alabama NPS Screening Assessment. However, Burnt Corn Creek has been monitored at 3 locations in conjunction with ADEM's CWA §303(d) Monitoring Program (Appendix F-2).

Burnt Corn Creek: At BCRE-2, Burnt Corn Creek is a low gradient stream located in the Southern Pine Plains and Hills (65f) subecoregion (Table 6b). Bottom substrates are comprised of sand and gravel (Table 6b). Habitat quality was assessed as *excellent* (Table 6b). Ten EPT families were collected, indicating a *good* aquatic macroinvertebrate community (Table 7b).

Intensive water quality data was collected at BCRE-2, as well as an upstream location at BRCE-3, and a downstream location at BCRE-1 on four occasions between May through September of 1999 (Appendix E-1). Sampling results did not detect water quality impairment (Appendix F-2).

NPS priority status: Assessment results indicated the macroinvertebrate community to be in good condition.

Sub-Watershed: Franklin Mill Creek	**NRCS Sub-Watershed Number 060**

Land use: The Franklin Mill Creek sub-watershed drains approximately 14 mi^2 in Escambia County. Forest and urban areas were estimated to comprise 95% of the sub-watershed (Table 2b). Two current construction/stormwater authorizations and 1 mining NPDES permit have been issued in the sub-watershed (Table 9b).

NPS impairment potential: The potential for impairment from all rural NPS categories was *low* (Table 5b). The potential for impairment from urban sources was estimated as *high* (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: An assessment of the Franklin Mill Creek sub-watershed has not been conducted.

Sub-Watershed: Jernigan Mill Creek	**NRCS Sub-Watershed Number 070**

Land use: The Jernigan Mill Creek sub-watershed drains approximately 25 mi^2 in Escambia County. SWCD land use estimates were 72% forest, 10% cropland, 8% urban, and 5% pasture (Table 2b). Two current construction/stormwater authorizations, and one mining NPDES permit have been issued in the sub-watershed (Table 9b).

NPS impairment potential: Potential for NPS impairment from mining sources was *high* (Table 5b). The overall potential for impairment from nonpoint sources was estimated as *moderate*. There was a *moderate* potential for impairment from urban runoff (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: An assessment has not been conducted within the Jernigan Mill Creek sub-watershed.

Sub-Watershed: Little Escambia Creek	NRCS Sub-Watershed Number 090

Station	Assessment Type	Date	Location	Area (mi2)	Class.
LEC-1	C, H, M	1999	Little Escambia Cr. @ US Hwy 31	135	F&W
LEC-2	C	1999	Little Escambia Cr. @ Escambia CR 35		F&W
NGCE-1	C, H, M, F	1999	Narrow Gap Creek at unnamed Escambia CR off AL Hwy 113	11	F&W
EB07U2-15	C, H	1998	Tributary to Little Escambia Cr. approx. 0.3 mi us of confluence with Little Escambia Cr	1	F&W

Land use: The Little Escambia Creek sub-watershed drains approximately 140 mi^2 in Conecuh and Escambia Counties. SWCD estimated land use as 91% forest (Table 2b). Two current construction/stormwater authorizations and 4 mining NPDES permits have been issued in the sub-watershed (Table 9b).

NPS impairment potential: The overall potential for impairment from nonpoint sources was estimated as *low* (Table 5b). There was a *moderate* potential for impairment from mining activities (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: One station was monitored on Narrow Gap Creek in conjunction with the SE Alabama NPS Screening Assessment (Table 10b). Little Escambia Creek was monitored at two locations as part of ADEM's CWA §303(d) Monitoring Program (Appendix F-2). A tributary to Little Escambia Creek has been evaluated as part of ADEM's ALAMAP Program (Appendix F-3). Complete station descriptions are provided in Appendix E-1.

Little Escambia Creek: At LEC-1, Little Escambia Creek is a low-gradient stream characterized by a sand and gravel substrate (Table 6b). Habitat quality was assessed as *excellent* using the glide/pool assessment matrix (Table 6b). Nine EPT families were collected indicating a *good* aquatic macroinvertebrate community (Table 7b). Intensive water quality data was collected LEC-1 and LEC-2 on four sampling events between May of 1999 and September of 1999 (Appendix F-2). Results did not indicate chemical impairment.

Narrow Gap Creek: At NGCE-1, Narrow Gap Creek is a low-gradient, gravel-bottomed stream located in the Southern Pine Plains and Hills subecoregion (Table 6b). Habitat quality was assessed as *excellent* (Table 6b). Eight EPT families were collected indicating a *fair* aquatic macroinvertebrate community (Table 7b). The fish assessment indicated a *poor* fish community (Table 7b). Water chemistry samples collected in July of 1999 did not indicate a cause of impairment to the aquatic communities (Appendix D-1).

NPS priority status: Bioassessment results indicated impaired biological conditions at Narrow Gap Creek (Table 12b). Little Escambia Creek was identified as a priority sub-watershed (Table 13b).

Escambia River CU (0314-0305) Summary

Land use: The Escambia River CU contains seven sub-watersheds in a 363-mi^2 area of Conecuh, Escambia, and Monroe Counties. The CU is located almost entirely within the Southern Pine Plains and Hills Subecoregion (65f) of the Southeastern Plains (65) Ecoregion. The primary land uses were forest and cropland.

Percent land cover estimated by local SWCD (ASWCC 1998)

Forest	Row crop	Pasture	Mining	Urban	Open Water	Other
67%	21%	4%	2%	3%	0%	3%

NPS impairment potential: Although the CU contains seven sub-watersheds, the Pritchetts Mill Branch sub-watershed (070) is <1 square mile and NPS impairment potential was not calculated. NPS impairment potential for the remaining six sub-watersheds was estimated to be *moderate*. The main NPS concerns were cropland and mining. Impairment from urban runoff and development was a concern within three sub-watersheds.

Number of sub-watersheds with (M)oderate or (H)igh ratings for each NPS category (Table 5b).

Category	Overall Potential	Animal husbandry	Aqua-culture	Row crop	Pasture	Mining	Forestry	Sediment
Moderate	6	0	1	1	1	0	0	0
High	0	0	0	3	0	3	0	0

Number of sub-watersheds with (M)oderate or (H)igh ratings for each point source category (Table 5b).

Category	% Urban	Development	Septic tank failure
Moderate	2	1	0
High	1	0	0

Historical data/studies: Assessments have been conducted in four sub-watersheds (Table 8b). Big Escambia Creek was intensively monitored at two stations within sub-watersheds 020 and 040 (Table 8b). Six stations have been evaluated in conjunction with ADEM's 1996 Clean Water Strategy Project (Appendix F-4) and ALAMAP Program (Appendix F-3). A summary of each of these studies, including lead agency, project objectives, data collected, and applicable quality assurance manuals is located in the appendices.

Assessments conducted during the SE Alabama NPS Screening Assessment: Five stations within the Big Escambia Creek (020), Sizemore Creek (030), and Big Escambia Creek (040) sub-watersheds were assessed the SE Alabama NPS Screening Assessment (Table 10b).

Sub-watershed summaries: Historical monitoring data were used to provide a comprehensive assessment. A summary of the information available for all sub-watersheds is provided. Each summary discusses land use, NPS impairment potential, assessments conducted within the sub-watershed, and NPS priority rating based on available data. The summaries point out significant data and reference appropriate tables and appendices. Assessments of habitat, biological, and chemical conditions are based on long-term data from ADEM's Ecoregional Reference Site Program. Tables referenced in the summaries are located at the end of Section II. Appendices are located at the end of this report.

Sub-watershed assessments: Habitat, chemical/physical, and biological indicators of water quality were monitored at six stations in the Big Escambia Creek (020), Sizemore Creek (030), and Big

Escambia Creek (040) sub-watersheds (Table 12b). Habitat quality was assessed as *excellent* at all stations (Table 6b). Results of the macroinvertebrate assessment indicated the macroinvertebrate community to be in *good* condition at 3 stations (50%) and *fair* condition at three stations (50%) (Table 7b). A fish IBI assessment conducted at one station indicated the fish community to be in *fair* condition (Table 7b).

The overall condition was rated as the lowest assessment result obtained. Three stations were rated as *fair* and three stations were rated as *good* (Table 12b).

NPS priority sub-watersheds: Biological conditions at BEC-2, located in the Big Escambia Creek sub-watershed (020), and SECE-1 and SECE-2, located in the Sizemore Creek sub-watershed (030) were rated as *fair* (Table 12b). Sizemore Creek was identified as a priority sub-watershed (Table 13b). Big Escambia Creek at BEC-2 is within Flomaton City Limits and was not recommended as a NPS priority sub-watershed.

Sub-Watershed: Big Escambia Creek	NRCS Sub-Watershed Number 010

Land use: The Big Escambia Creek sub-watershed drains approximately 59 mi^2 in Monroe County. Land use was mainly forest and cropland with some pasture and urban areas (Table 2b). One current construction/stormwater authorization and two mining NPDES permits have been issued in the sub-watershed (Table 9b).

NPS impairment potential: The overall potential for impairment from nonpoint sources was estimated as *moderate* (Table 5b). The main NPS concern was runoff from crop and pasture lands. There was a *moderate* potential for impairment from urban runoff (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: An assessment has not been conducted within the Big Escambia Creek sub-watershed.

Sub-Watershed: Big Escambia Creek	NRCS Sub-Watershed Number 020

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
EACC-1	C, H, M	1999	Escambia Creek at unnamed Conecuh CR West of Range	43	F&W
BEC-2	C, H, M	1999	Big Escambia Creek at Escambia CR 27	193	F&W
PE07	C	1996	Big Escambia Cr. @ unnamed Escambia CR NW of Barnett Crossroads	43	F&W
PE08	C	1996	Big Escambia Cr. @ Escambia CR 27	193	F&W

Land use: The Big Escambia Creek sub-watershed drains approximately 140 mi^2 in Conecuh, Escambia, and Monroe Counties. Land use was estimated as 90% forest and 7% cropland (Table 2b). Two current construction/stormwater authorizations, three mining NPDES permits, and one semi-public/private NPDES permit have been issued in the sub-watershed (Table 9b).

NPS impairment potential: The potential for NPS impairment from mining activities was *high* (Table 5b). The overall potential for impairment from nonpoint sources was estimated as *moderate* (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: Big Escambia Creek and Escambia Creek were monitored during the SE Alabama NPS Screening Assessment (Table 10b). Big Escambia Creek was monitored ADEM's 1999 CWA §303(d) Monitoring Program (Appendix F-2). Two stream segments were evaluated in 1996 as part of ADEM's Clean Water Strategy Project (Appendix F-4). Complete station descriptions are listed in Appendix E-1.

Escambia Creek: At EACC-1, Escambia Creek is a low-gradient stream located in the Southern Pine Plains and Hills (65f) subecoregion (Table 6b). Bottom substrates were composed of sand, detritus, and gravel (Table 6b). Habitat quality was assessed as *excellent* (Table 6b). Nine EPT families were collected indicating a *good* aquatic macroinvertebrate community (Table 7b). Water quality samples collected in July of 1999 did not indicate impairment (Appendix D-1).

Big Escambia Creek: At BECE-2, Big Escambia Creek is a riffle-run stream located in the Southern Pine Plains and Hills (65f) subecoregion (Table 6b). Bottom substrates are composed of gravel and sand (Table 6b). Habitat quality was assessed as *excellent* (Table 6b). Eleven EPT families were collected indicating a *good* aquatic macroinvertebrate community (Table 7b). Water quality samples were not collected at this site.

A similar substrate composition but lower stream gradient characterizes Big Escambia Creek at BEC-2 (Table 6b). Habitat quality was assessed as *excellent* (Table 6b). Seven EPT families were collected indicating a *fair* aquatic macroinvertebrate community (Table 7b). Intensive water quality samples were collected four times during May through September of 1999. Results did not indicate impairment (Appendix F-4).

NPS priority status: Assessments conducted at Escambia Creek and Big Escambia Creek did not indicate biological impairment. Big Escambia Creek is therefore not recommended as a NPS priority sub-watershed.

Sub-Watershed: Sizemore Creek	**NRCS Sub-Watershed Number 030**

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
SECE-1	C, H, M	1999	Sizemore Creek at unnamed Escambia CR SE of Martinville	22	F&W
SECE-2	C, H, M, F	1999	Sizemore Creek at Escambia CR 27	79	F&W
PE16	C	1996	Sizemore Cr. @ Escambia CR 27	79	F&W
PE15	C	1996	Sizemore Cr. @ AL Hwy 21	13	F&W

Land use: The Sizemore Creek sub-watershed drains approximately 81 mi^2 in Escambia County. SWCD land use estimates for this sub-watershed were 58% forest, 29% cropland, 6% pasture, 4% other land uses (Table 2b). Two current construction/stormwater authorizations, two mining, one semi-public/private, and one municipal NPDES permits have been issued in the sub-watershed (Table 9b).

NPS impairment potential: The potential for impairment from cropland runoff was estimated to be *moderate* (Table 5b). Impairment potential from mining activities was estimated as *high.* The overall potential for impairment from nonpoint sources was estimated as *moderate* (Table 5b). Silviculture has been noted to be prevalent within the sub-watershed during site visits.

Assessments conducted during the SE Alabama NPS Screening Assessment: Sizemore Creek was monitored at two locations during the SE Alabama NPS Screening Assessment (Table 10b). Two stream segments were evaluated as part of ADEM's 1996 Clean Water Strategy Project (Appendix F-4).

Sizemore Creek: At SECE-1, Sizemore Creek is a low-gradient, sandy-bottomed stream located in the Southern Pine Plains and Hills (65f) subecoregion (Table 6b). Habitat quality was assessed as *excellent* (Table 6b). Six EPT families were collected indicating a *fair* aquatic macroinvertebrate community (Table 7b).

At SECE-2, Sizemore Creek is characterized by a higher percent gravel substrate and a riffle-run geomorphology (Table 6b). Habitat quality was assessed as *excellent* (Table 6b). Bioassessment results indicated both the macroinvertebrate and fish communities to be in *fair* condition (Table 7b).

Water chemistry samples were collected in July of 1999 (Appendices D-1 and D-2). Fecal coliform concentrations were elevated. Phosphorus (TP) and nitrogen (TKN and TON) were also elevated.

NPS priority status: Biological conditions were impaired at both monitoring sites located on Sizemore Creek (Table 12b). Water quality samples suggest pathogens and nutrient enrichment to

be potential causes of impairment at SECE-2. Information compiled by the SWCD suggested cropland runoff and mining activities to be the primary NPS concerns within the sub-watershed. Sizemore Creek was identified as a priority sub-watershed due to *moderate* impairment of biological communities potentially caused by nutrient enrichment within the watershed (Table 13b).

Sub-Watershed: Big Escambia Creek	**NRCS Sub-Watershed Number 040**

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
BEC-1	C	1999	Big Escambia Cr. @ US Hwy 31	330	F&W
PE09	C	1996	Big Escambia Cr. @ US Hwy 31	330	F&W
CNCE-1	C, H, M	1999	Cowpen Creek at Escambia Co. Rd. 12	14	F&W

Land use: The Big Escambia Creek sub-watershed drains approximately 54 mi^2 in Escambia County. SWCD land use estimates for this sub-watershed were 63% forest, 13% cropland, 8% urban, 7% mining, and 5% each for pasture and wetlands (Table 2b). Three current construction/stormwater authorizations and 4 mining NPDES permits have been issued in the sub-watershed (Table 9b).

NPS impairment potential: The overall potential for impairment from nonpoint sources was estimated as *moderate* (Table 5b). The main NPS concerns in the sub-watershed were aquaculture and mining activities. There was a *moderate* potential for impairment from urban runoff and development (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: Cowpen Creek at CNCE-1 was monitored during the SE Alabama NPS Screening Assessment (Table 10b). Big Escambia Creek was monitored at BEC-1 in conjunction with ADEM's 1999 CWA §303(d) Monitoring Program (Appendix F-2). It was evaluated at this location in 1996 during ADEM's Clean Water Strategy Project (Appendix F-4).

Cowpen Creek: Cowpen Creek at CNCE-1, is a low-gradient stream with sand, gravel, and detritus substrates (Table 6b). Habitat quality was assessed as *excellent* (Table 6b). Ten EPT families were collected indicating a *good* aquatic macroinvertebrate community (Table 7b).

Big Escambia Creek: Intensive water quality sampling was conducted at BEC-1 on four occasions between May of 1999 and September of 1999 (Appendix F-2). Results indicated periodically high concentrations of fecal coliform.

Sub-Watershed: Pritchetts Mill Creek	**NRCS Sub-Watershed Number 070**

Land use: The Pritchetts Mill Creek sub-watershed drains less than 1 square mile in Escambia County. The local SWCD did not estimate percent land use. However, EPA estimated land use as 65% forest, 11% pasture/hay, 11% cropland and 10% other grasses (Table 2b, Appendix A-1). One current construction/stormwater authorization has been issued in the sub-watershed (Table 9b).

NPS impairment potential: The local SWCD estimates of animal concentrations and sedimentation in the sub-watershed were not completed during the 1998 survey due to the small size of the sub-watershed.

Assessments conducted during the SE Alabama NPS Screening Assessment: An assessment has not been conducted within the Pritchetts Mill Creek sub-watershed.

Sub-Watershed: Canoe Creek	**NRCS Sub-Watershed Number 090**

Station	Assessment Type	Date	Location	Area (mi^2)	Class.
EB10A2-27	C, H	1998	Unnamed tributary to Hobbs Branch, approx. 0.1 mi. us of confluence with Hobbs Branch	2	F&W

Land use: The Canoe Creek sub-watershed drains approximately 19 mi^2 in Escambia County. Forest and cropland comprised 92% of the sub-watershed (Table 2b). One current construction/stormwater authorization has been issued in the sub-watershed (Table 9b).

NPS impairment potential: The overall potential for impairment from nonpoint sources was estimated as *moderate* (Table 5b). The potential for NPS impairment from cropland use (44%) was *high* (Table 2b).

Assessments conducted during the SE Alabama NPS Screening Assessment: In 1998, one site was assessed using water quality parameters as part of ADEM's ALAMAP program (Appendix F-3).

Sub-Watershed: Pine Barren Creek	**NRCS Sub-Watershed Number 130**

Land use: The Pine Barren Creek sub-watershed drains approximately 10 mi^2 in Escambia County. Land use was estimated as 52% cropland and 34% urban (Table 2b). Two current construction/stormwater authorizations have been issued in the sub-watershed (Table 9b).

NPS impairment potential: The overall potential for impairment from nonpoint sources was estimated as *moderate* (Table 5b). The potential for NPS impairment from row crop runoff and urban sources was estimated as *high* (Table 5b).

Assessments conducted during the SE Alabama NPS Screening Assessment: An assessment has not been conducted within the Pine Barren Creek sub-watershed.

Table 2b. Land use percentages for the Upper Conecuh (0314-0301), Patsaliga River (0314-0302), and Sepulga River (0314-0303) cataloging units from EPA landuse categories (EPA 1997) and local SWCD Conservation Assessment Worksheet landuse estimates (ASWCC 1998).

Sub-Watershed	Percent Total Landuse													
	Open Water		Urban		Mines		Forest		Pasture		Row Crops		Other	
	SWCD	EPA	SWCD	EPA	SWCD	EPA	SWCD	EPA	SWCD	EPA	SWCD	EPA	SWCD	EPA
Upper Conecuh River (0314-0301)														
010	1	<1	<1	<1	0	<1	84	80	7	5	7	8	1	7
020	1	<1	1	<1	0	<1	69	79	14	4	13	8	2	7
030	1	1	2	<1	0	<1	67	63	10	10	17	15	3	10
040	3	2	1	<1	0	<1	84	81	4	34	5	6	3	11
050	1	1	4	<1	0	<1	72	78	8	7	14	8	1	5
Patsaliga River (0314-0302)														
010	1	<1	1	<1	0	<1	71	73	18	5	5	12	4	10
020	1	<1	<1	<1	0	<1	83	80	9	5	2	7	4	8
030	<1	<1	8	<1	0	<1	69	61	10	10	8	14	5	14
040	<1	<1	2	<1	0	<1	66	71	16	9	11	13	5	7
050	<1	<1	0	<1	0	<1	86	84	6	4	7	6	2	6
060	<1	<1	1	<1	0	<1	75	73	9	9	13	16	1	1
Sepulga River (0314-0303)														
010	<1	<1	0	<1	0	<1	94	92	3	2	3	2	<1	3
020	<1	<1	20	2	0	<1	58	83	12	5	9	5	<1	5
030	<1	<1	1	<1	0	<1	90	89	6	3	2	3	<1	4
040	<1	<1	<1	<1	0	<1	84	86	7	6	7	6	<1	2
050	1	<1	1	<1	0	<1	81	75	10	7	6	8	1	9
060	1	<1	1	<1	0	<1	78	79	10	6	10	9	<1	6
070	<1	<1	0	<1	0	<1	91	86	2	4	6	5	1	4

Table 2b. cont., Land use percentages for the Lower Conecuh (0314-0304) and Escambia River (0314-0305) cataloging units from EPA landuse categories (EPA 1997) and local SWCD Conservation Assessment Worksheet landuse estimates (ASWCC 1998).

Sub-Watershed	Percent Total Landuse													
	Open Water		Urban		Mines		Forest		Pasture		Row Crops		Other	
	SWCD	EPA	SWCD	EPA	SWCD	EPA	SWCD	EPA	SWCD	EPA	SWCD	EPA	SWCD	EPA
Lower Conecuh River (0314-0304)														
010	0	1	2	<1	0	<1	91	83	2	4	3	3	2	9
020	<1	<1	1	<1	0	<1	89	84	3	5	6	7	<1	2
030	<1	<1	6	1	<1	<1	82	74	5	8	6	9	1	7
040	<1	<1	0	<1	0	<1	93	86	1	3	5	4	1	7
050	<1	<1	2	<1	<1	<1	88	80	3	6	5	7	1	5
060	0	1	22	2	0	1	73	81	2	4	0	3	3	8
070	0	2	8	<1	<1	<1	72	54	5	13	10	11	5	19
090	0	<1	1	<1	<1	<1	91	87	2	6	4	6	2	1
Escambia River (0314-0305)														
010	0	<1	5	<1	0	<1	43	48	9	23	41	22	1	5
020	0	<1	<1	<1	1	<1	90	84	1	5	7	5	1	4
030	0	<1	1	<1	1	<1	58	54	6	26	29	17	4	2
040	0	<1	8	<1	7	2	63	69	5	14	13	10	5	3
070	---	<1	---	3	---	<1	---	65	---	11	---	11	---	10
090	0	<1	1	<1	0	<1	48	34	3	37	44	26	3	3
130	0	<1	34	9	0	<1	6	14	5	41	52	32	2	2

Table 3b. Estimates of animal concentrations, animal units (AU), and percent of acres where pesticides/herbicides applied in the Upper Conecuh River (CU 0314-0301), Patsaliga River (CU 0314-0302), and Sepulga River (0314-0303) Cataloging Units. Numbers of animals and pesticides/herbicides listed by acreage and sub-watershed were provided by the local SWCDs on Conservation Assessment Worksheets completed in 1998 (ASWCC 1998).

		U. Conecuh (0314-0301)					Patsaliga (0314-0302)						Sepulga (0314-0303)				
		010	020	030	040	050	010	020	030	040	050	060	010	020	030	040	050
County (s)		Bullock Pike	Montgomery Pike	Crenshaw Montgomery	Covington Crenshaw	Conecuh Covington	Crenshaw Montgomery Pike	Crenshaw Montgomery	Crenshaw	Crenshaw	Butler Covington Crenshaw	Covington	Butler Conecuh Monroe	Butler	Butler	Butler Conecuh	Butler Crenshaw Lowndes
Acres Reported (%)		100	96	99	100	96	100	100	94	100	100	100	100	100	100	89	105
Pesticides Applied	Est. % Total Acres	5	13	13	2	*	4	*	8	18	4	5	0	1	1	1	3
Cattle	# / Acre	0.03	0.05	0.05	0.03	0.04	0.06	0.03	0.06	0.13	0.03	0.05	0.02	0.05	0.03	0.04	0.04
	A.U./Acre	0.03	0.05	0.05	0.03	0.04	0.06	0.03	0.06	0.13	0.03	0.05	0.02	0.05	0.03	0.04	0.04
Dairy	# / Acre																
	A.U./Acre																
Swine	# / Acre			0.01	<0.01					0.02							
	A.U./Acre			<0.01	<0.01					0.01							
Poultry - Broilers	# / Acre	5.06	1.79	13.13	3.85	0.51	2.11	6.00	5.63	31.58	2.26		1.96	8.13	4.20		7.58
	A.U./Acre	0.04	0.01	0.11	0.03	<0.01	0.02	0.05	0.05	0.25	0.02		0.02	0.07	0.03		0.06
Poultry - Layers	# / Acre	0.12	0.15	0.61	0.11				0.20	0.02	0.15						0.23
	A.U./Acre	<0.01	<0.01	<0.01	<0.01				<0.01	<0.01	<0.01						<0.01
Catfish	% Total Acres			0.02	0.01												
Total	A.U./Acre	**0.07**	**0.07**	**0.16**	**0.07**	**0.05**	**0.08**	**0.08**	**0.11**	**0.39**	**0.05**	**0.05**	**0.03**	**0.12**	**0.06**	**0.04**	**0.10**
Potential for NPS Impairment		Low	Low	Mod	Low	Low	Mod	Mod	Mod	High	Low	Low	Low	Mod	Low	Low	Mod

* No data reported for this portion of the subwatershed

Table 3b. cont., Estimates of animal concentrations, animal units (AU), and percent of acres where pesticides/herbicides applied in the Lower Conecuh River (0314-0304) and Conservation Assessment Worksheets completed in 1998 (ASWCC 1998).

		Sepulga (0314-0303)		L. Conecuh (0314-0304)								Escambia (0314-0305)						
		060	070	010	020	030	040	050	060	070	090	010	020	030	040	070	090	130
County (s)		Butler Conecuh Covington	Conecuh Escambia	Escambia	Conecuh Monroe	Conecuh Escambia	Conecuh Escambia	Conecuh Escambia	Escambia	Escambia	Conecuh Escambia	Monroe	Conecuh Escambia Monroe	Escambia	Escambia	Escambia	Escambia	Escambia
Acres Reported (%)		100	90	100	100	100	100	97	100	100	100	100	100	100	100	100	100	100
Pesticides Applied	Est. % Total Acres	2	0	*	0	0	0	0	0	12	6	30	3	21	10	*	34	81
Cattle	# / Acre	0.05	0.01	0.01	0.03	0.04	0.01	0.02	0.01	0.03	0.01	0.07	0.01	0.04	0.03	*	<0.01	<0.01
	A.U./Acre	0.05	0.01	0.01	0.03	0.04	0.01	0.02	0.01	0.03	0.01	0.07	0.01	0.04	0.03	*	<0.01	<0.01
Dairy	# / Acre				<0.01											*		
	A.U./Acre				<0.01											*		
Swine	# / Acre			<0.01		<0.01		<0.01			<0.01			<0.01		*		
	A.U./Acre			<0.01		<0.01		<0.01			<0.01			<0.01		*		
Poultry - Broilers	# / Acre	5.03														*		
	A.U./Acre	0.04														*		
Poultry - Layers	# / Acre	0.39														*		
	A.U./Acre	0.00														*		
Catfish	% Total Acres			0.10										0.01	0.05	* *		
Total	A.U./Acre	**0.09**	**0.01**	**0.01**	**0.03**	**0.04**	**0.01**	**0.02**	**0.01**	**0.03**	**0.01**	**0.07**	**0.01**	**0.04**	**0.03**	*	**<0.01**	**<0.01**
Potential for NPS Impairment		Mod	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	*	Low	Low

* No data reported for this portion of the subwatershed

Table 4b. Sedimentation estimates by source, forest condition, septic tank information and resource concerns by subwatershed in the Upper Conecuh River (0314-0301) and Patsaliga River (0314-0302) cataloging units as provided by the local Soil and Water Conservation Districts (SWCD) on Conservation Assessment Worksheets (ASWCC 199#). (* Indicates not reported)

Basin Code- Cataloging Unit	0314-0301					0314-0302						0314-0303			
Subwatershed	**010**	**020**	**030**	**040**	**050**	**010**	**020**	**030**	**040**	**050**	**060**	**010**	**020**	**030**	**040**
Forest Condition															
% of Subwatershed Needing Forest Improvement	11	26	42	34	9	20	56	53	53	33	13	19	*	*	26
Sediment Contributions (Tons/Acre)															
Cropland	0.2	0.4	0.5	0.1	0.4	0.2	0.1	0.3	0.4	0.2	0.4	<0.1	0.2	<0.1	0.1
Sand & Gravel Pits	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Mined Land															
Developing Urban Land	<0.1	0.8	0.2				<0.1	<0.1		<0.1			0.1		
Critical Areas	0.3	0.6	0.4	0.2	0.2	0.4	0.2	0.3	0.4	0.1	0.2	0.1	0.2	0.2	<0.1
Gullies	0.9	1.9	1.4	0.5	0.2	0.7	0.6	0.7	0.7	0.6	0.3	0.2	0.5	0.5	0.1
Stream Banks	0.2	0.5	0.3	0.7	1.6			<0.1	<0.1	0.4	1.5	0.2	0.2	0.3	0.2
Dirt Roads and Roadbanks	0.8	1.5	1.0	0.8	1.1	0.6	0.4	0.3	0.7	0.8	1.2	0.3	0.1	0.2	0.3
Woodlands			<0.1	0.1	0.2	0.1	<0.1	<0.1	<0.1	0.2	0.2	0.2	0.2	0.3	0.1
Total Sediment	2.4	5.7	3.9	2.5	3.8	2.0	1.4	1.5	2.3	2.3	3.8	0.9	1.5	1.5	0.8
Potential for Sediment NPS	Low	Mod	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Septic Tanks															
# Septic Tanks per acre	0.03	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	*	*	0.01	0.02	0.01	0.01
# Septic Tanks Failing per acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*	*	0.00	0.00	0.00	0.00
# of Alternative Septic Systems	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	*	*	0.00	0.00	0.00	0.00
Resource Concerns in the Subwatershed															
Excessive Erosion on Cropland			X	X	X	X	X	X	X	X	X	X		X	X
Gully Erosion on Agricultural Land			X	X	X	X	X	X	X	X		X		X	X
Road and Roadbank Erosion	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Poor Soil Condition (cropland)	X	X		X	X	X				X	X	X			X
Excessive Animal Waste Applied to Land			X				X			X		X	X	X	
Excessive Pesticides Applied to Land			X						X						
Excessive Sediment from Cropland			X	X	X	X	X	X	X	X	X	X		X	
Excessive Sediment From Roads/Roadbanks	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Excessive Sediment from Urban Development													X		
Inadequate Management of Animal Wastes			X						X	X		X	X	X	
Nutrients in surface waters	X	X	X			X				X			X		
Pesticides in surface waters									X						
Livestock have access to streams	X		X	X	X	X	X	X	X	X	X	X	X	X	X

Table 4b. cont.,
by the local Soil and Water Conservation Districts (SWCD) on Conservation Assessment Worksheets (199#).

Basin Code- Cataloging Unit	0314-0303			0314-0304								0314-0305						
Subwatershed	**050**	**060**	**070**	**010**	**020**	**030**	**040**	**050**	**060**	**070**	**090**	**010**	**020**	**030**	**040**	**070***	**090**	**130**
Forest Condition																		
% of Subwatershed Needing Forest Improvement	12	9	25	*	29	19	12	19	*	*	3	19	18	*	*	*	*	*
Sediment Contributions (Tons/Acre)																		
Cropland	0.2	0.2	0.1	<0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.7	0.1	0.6	0.2	*	0.6	0.7
Sand & Gravel Pits	0.1	<0.1	<0.1		0.1	0.3	<0.1	0.4		0.3	0.3	0.3	0.2	0.5	0.3	*		
Mined Land				<0.1			<0.1				<0.1		<0.1	0.1	<0.1	*	<0.1	
Developing Urban Land					<0.1	<0.1		<0.1					<0.1			*		
Critical Areas	0.2	0.2	<0.1		<0.1	<0.1	<0.1	<0.1			<0.1	<0.1	<0.1			*		
Gullies	0.5	0.3	0.1		<0.1	<0.1	<0.1	<0.1			<0.1	<0.1	<0.1	0.3		*		
Stream Banks	0.2	0.9	0.1	<0.1	0.1	0.1	<0.1	0.1			<0.1	<0.1	<0.1			*		
Dirt Roads and Roadbanks	0.2	0.6	0.3	0.1	0.2	0.2	0.2	0.2	0.1	<0.1	0.1	0.1	0.2	0.1	0.1	*	<0.1	<0.1
Woodlands	0.2	0.2	0.1	<0.1	0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	*	<0.1	
Total Sediment	1.6	2.4	0.7	0.1	0.7	0.9	0.4	0.8	0.1	0.4	0.6	1.3	1.6	1.6	0.6	*	0.7	0.7
Potential for Sediment NPS	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	*	Low	Low
Septic Tanks																		
# Septic Tanks per acre	0.01	0.01	0.01	0.00	0.01	0.02	0.00	0.01	0.06	0.03	0.01	0.01	0.00	0.01	0.01	*	0.02	0.05
# Septic Tanks Failing per acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*	0.00	0.00
# of Alternative Septic Systems	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*	0.00	0.00
Resource Concerns in the Subwatershed																		
Excessive Erosion on Cropland	X	X	X		X	X	X	X			X		X			*		
Gully Erosion on Agricultural Land	X	X	X		X	X	X	X			X		X	X		*		
Road and Roadbank Erosion	X	X	X	X	X	X	X	X			X	X	X	X		*		
Poor Soil Condition (cropland)	X	X	X		X	X	X	X			X		X			*		
Excessive Animal Waste Applied to Land		X														*		
Excessive Pesticides Applied to Land	X															*		
Excessive Sediment from Cropland	X	X											X			*		
Excessive Sediment From Roads/Roadbanks	X	X	X	X	X	X	X	X			X	X	X			*		
Excessive Sediment from Urban Development																*		
Inadequate Management of Animal Wastes		X														*		
Nutrients in surface waters	X														X	*	X	
Pesticides in surface waters	X														X	*	X	
Livestock have access to streams	X	X										X	X	X		*		

Table 5b. Estimate of potential sources of NPS impairment for sub-watersheds in the Upper Conecuh (0314-0301), Patsaliga River (0314-0302), and Sepulga River (0314-0303) cataloging units. Source categories are based on information provided by the local Soil and Water Conservation Districts (SWCD) on Conservation Assessment Worksheets completed in 1998 (ASWCC 1998). Estimates of impairment potential from development are from current construction/stormwater authorization information provided by the Mining and NPS Unit of ADEM. Range of values used to define low, moderate, and high impairment potential for each category are listed in the Methods Tables 1b and 1c. Tables where raw data can be found are provided below.

Cataloging Unit	Sub-watershed	Potential NPS Impairment	Potential Sources of Impairment									
			Animal Husbandry	Aquaculture	Row Crops	Pasture Runoff	Mining	Forestry Practices	Sedimentation	Urban	Development	# Failing Septic Tanks
Raw Data Tables			3d	3d	2d	2d	2d	4d	4d	2d	9d	4d
0314-0301	010	L	L	L	L	L	L	L	L	L	L	L
	020	M	L	L	L	M	L	M	M	L	M	L
	030	M	M	M	M	M	L	M	L	L	M	L
	040	L	L	L	L	L	L	M	L	L	M	L
	050	L	L	L	L	L	L	L	L	M	M	L
0314-0302	010	M	M	L	L	M	L	L	L	L	L	L
	020	M	M	L	L	M	L	H	L	L	L	L
	030	M	M	L	L	M	L	H	L	M	M	L
	040	M	H	L	L	M	L	H	L	L	L	L
	050	M	L	L	L	M	L	M	L	L	L	L
	060	L	L	L	L	M	L	L	L	L	L	L
0314-0303	010	L	L	L	L	L	L	L	L	L	L	L
	020	M	M	L	L	M	L	---	L	H	M	L
	030	L	L	L	L	L	L	---	L	L	L	L
	040	L	L	L	L	L	L	M	L	L	L	L
	050	M	M	L	L	M	L	L	L	L	M	L
	060	M	M	L	L	M	L	L	L	L	L	L
	070	L	L	L	L	L	L	M	L	L	L	L

Table 5b. cont., Estimates of potential sources of NPS impairment for sub-watersheds in the Lower Conecuh River (0314-0304) and Escambia River (0314-0305) cataloging units. Source categories are based on information provided by the local Soil and Water Conservation Districts (SWCD) on Conservation Assessment Worksheets completed in 1998 (ASWCC 1998). Estimates of impairment potential from development are from construction/stormwater authorization information provided by the Mining and NPS Unit of ADEM. Range of

below.

Cataloging Unit	Sub-watershed	Potential NPS Impairment	Potential Sources of Impairment									
			Animal Husbandry	Aquaculture	Row Crops	Pasture Runoff	Mining	Forestry Practices	Sedimentation	Urban	Development	# Failing Septic Tanks
Raw Data Tables			3d	3d	2d	2d	2d	4d	4d	2d	9d	4d
0314-0304	010	M	L	H	L	L	L	---	L	L	M	L
	020	L	L	L	L	L	L	M	L	L	M	L
	030	L	L	L	L	L	L	L	L	M	M	L
	040	L	L	L	L	L	L	L	L	L	L	L
	050	L	L	L	L	L	M	L	L	L	M	L
	060	L	L	L	L	L	L	---	L	H	L	L
	070	M	L	L	L	L	H	---	L	M	L	L
	090	L	L	L	L	L	M	L	L	L	L	L
0314-0305	010	M	L	L	H	M	L	L	L	M	L	L
	020	M	L	L	L	L	H	L	L	L	L	L
	030	M	L	L	M	L	H	---	L	L	L	L
	040	M	L	M	L	L	H	---	L	M	M	L
	070	---	---	---	---	---	---	---	---	---	L	---
	090	M	L	L	H	L	L	---	L	L	L	L
	130	M	L	L	H	L	L	---	L	H	L	L

Table 6b. Physical characteristics and habitat quality of sites assessed in the Escambia basin.

		0302					0303	0304					
		PDCC-1	CECC-1	LPCC-4	PYW-1	UPCC-1	RYC-2	FYCE-1	MHCE-1	MMCE-1	MYCE-1	SHCE-1	SSCE-1
Sub-watershed		030	040	040	050	050	030	010	010	010	010	010	010
Date (YYMMDD)		990602	990603	990603	990602	990526	990603	990525	990519	990518	990519	990525	990519
Ecoregion/ Subregion		65d	65d	65d	65d	65d	65d	65f	65f	65f	65p	65f	65f
Drainage area (mi^2)		14	14	20	24	12	49	3	9	8	4	9	24
Width (ft)		10	15	11	20	15	25	15	20	40	8	12	70
Canopy Cover*		S	MS	MS	S	MS	S	MS	S	O	50/50	MS	O
Depth (ft)	Riffle	---	---	---	---	---	---	---	0.5	---	---	---	
	Run	2.0	---	1.0	1.5	0.3	2.5	0.3	0.5	0.3	1.5	0.8	
	Pool	2.5	4.0	1.5	3.5	---	4.0	0.5	2.0	1.0	3.5	2.0	
Substrate (%)	Bedrock	---	---	---	---	---	---	---	---	---	---	---	---
	Boulder	---	---	---	---	---	---	---	---	---	---	---	---
	Cobble	---	---	---	---	---	---	---	---	---	---	---	---
	Gravel	---	---	---	---	1	---	---	63	5	---	20	---
	Sand	60	43	83	45	92	80	99	20	90	5	50	80
	Silt	5	5	2	5	2	2	---	1	1	71	5	2
	Detritus	35	17	15	25	4	18	1	5	3	3	25	3
	Clay	---	35	---	25	1	---	---	12	1	15	---	10
	Org. Silt	---	---	---	---	---	---	---	---	---	---	---	---
Habitat assessment form		GP	GP	GP	GP	GP	GP	GP	RR	GP	GP	GP	GP
Habitat Survey (% maximum)													
Instream habitat quality		60	57	38	48	28	55	19	48	22	58	66	28
Sediment deposition		76	83	69	71	53	78	55	56	56	84	84	63
Sinuosity		65	40	45	73	40	40	35	75	43	45	58	48
Bank and vegetative stability		40	35	24	18	65	13	75	75	80	61	61	54
Riparian measurements		85	79	89	89	90	75	85	84	95	73	90	86
Habitat assessment score		147	138	111	130	116	122	120	159	127	149	161	120
% Maximum		67	63	50	59	53	55	54	66	58	68	73	55
Assessment		E	E	G	E	G	E	E	E	E	E	E	E

*Canopy Cover: S = Shaded, MS = Mostly Shaded, 50/50 = Half Shaded / Half Open, MO = Mostly Open, O = Open

Table 6b, cont. Physical characteristics and habitat quality of sites assessed in the Escambia basin.

		0304						0305					
		JNCC-1	PRCC-2	PRCC-3	BCRE-2	LEC-1	NGCE-1	BEC-2	BECE-2	EACC-1	SECE-1	SECE-2	CNCE-1
Subwatershed #		030	030	030	050	090	090	020	020	020	030	030	040
Date (YYMMDD)		990518	990517	990518	990505	990505	990506	990504	990517	990517	990505	990505	990505
Ecoregion/ Subregion		65f	65f	65f	65f	65f	65f	65f	65f	65f	65f	65f	65f
Drainage area (mi^2)		9	13	8???			11					79	
Width (ft)		30	20	30	35	40	10	50	35	25	20	40	25
Canopy Cover*		S	50/50	S	MO	MO	S	MO	O	MS	MS	O	MO
Depth (ft)	Riffle	---	---	0.3	---	---	---	---	0.5	---	---	1	---
	Run	---	---	0.3	2.0	1.5	0.5	1.5	1.0	---	1.5	2.0	1.5
	Pool	4.0	3.0	3.0	>3.5	3.5	2.5	4.0	3.0	3.5	3.5	3.5	3.5
Substrate (%)	Bedrock	---	---	5.0	---	---	---	---	---	---	---	---	---
	Boulder	---	---	---	---	---	---	---	---	---	---	---	---
	Cobble	---	---	1	---	---	---	2	1	---	---	1	---
	Gravel	5	10	75	45	45	80	40	65	15	---	60	30
	Sand	70	72	4	45	45	13	43	25	60	78	19	50
	Silt	15	5	10	2	2	1	2	3	1	2	4	5
	Detritus	4	12	4	8	8	7	10	5	23	10	6	15
	Clay	3	1	1	---	---	---	3	1	1	---	10	---
	Org. Silt	3	---	---	---	---	---	---	---	---	---	---	---
Habitat assessment form		GP	GP	RR	GP	GP	GP	GP	RR	GP	GP	RR	GP
Habitat Survey (% maximum)													
	Instream habitat quality	52	69	68	65	74	76	75	85	76	52	75	68
	Sediment deposition	81	78	64	76	73	86	78	79	88	76	55	65
	Sinuosity	40	73	10	50	35	75	38	90	50	38	90	63
	Bank and vegetative stability	74	71	63	46	65	86	55	58	71	58	44	33
	Riparian measurements	93	90	90	73	79	85	85	70	71	88	60	56
Habitat Assessment Score		157	168	164	136	153	182	154	180	165	142	152	125
% Maximum		71	76	68	62	69	83	70	75	75	64	63	57
Assessment		E	E	E	E	E	E	E	E	E	E	E	E

*Canopy Cover: S = Shaded, MS = Mostly Shaded, 50/50 = Half Shaded / Half Open, MO = Mostly Open, O = Open

Table 7b. Bioassessment results conducted in the Patsaliga ('0314-0302), Sepulga ('0314-0303), Lower Conecuh ('0314-0304) and the Escambia (03140305) River basins by ADEM during 1999.

	Patsaliga					Sepulga	L. Conecuh						
Sub-watershed	030	040	040	050	050	030	010	010	010	010	010	010	030
Station	PDCC-1	CECC-1	LPCC-4	PYW-1	UPCC-1	RYC-2	FYCE-1	MHCE-1	MMCE-1	MYCE-1	SHCE-1	SSCE-1	JNCC-1
Macroinvertebrate community													
Date (yymmdd)	990602	990603	990603	990602	990526	990603	990525	990519	990518	990519	990525	990712	990518
# EPT families	8	6	5	7	5	4	4	7	4	5	9	4	8
Assessment	Fair	Fair	Fair	Fair	Fair	Poor	Poor	Fair	Poor	Fair	Good	Poor	Fair
Fish community													
Date (yymmdd)	990714		990714	990721	990713		990712		990712			990712	990712
Time (min)	30		30	30	30		30		20			30	30
Richness measures													
# species	16		16	19	16		5		1			8	18
# darter species	1		1	1	1		1		0			1	4
# minnow species	5		5	6	6		1		1			2	6
# species	5		5	6	2		2		0			2	5
# sucker species	0		0	0	0		0		0			0	1
# intolerant species	1		0	0	0		0		0			0	0
Composition measures													
% sunfish	20.9		18.3	13	10.9		20		0			57.9	31.1
% omnivores and herbivores	1.5		2.8	0	7.8		53.3		0			10.5	1.4
% insectivourous cyprinids	52.2		64.8	64	67.2		0		0			5.3	31.1
% top carnivores	1.5		1.4	4	4.7		0		0			5.3	1.4
Population measures													
Individuals	67		71	100	64		15		2			19	74
# collected per hour	134		142	200	128		30		6			38	148
% disease and anomalies	17.9		14.1	8	0		0		0			0	0
IBI Score	38		36	40	42		20		24			26	46
Biological Condition	Poor		Poor	Fair	Fair		Very poor		Very poor			Very poor	Fair

Table 7b, cont. Bioassessment results conducted in the Patsaliga (0314-0302), Sepulga (0314-0303), Lower Conecuh (0314-0304) and the Escambia (0314-0305) River basins by ADEM during 1999.

	L Conecuh				Escambia						
Sub-watershed	030	030	050	090	020	020	020	030	030	040	090
Station	PRCC-2	PRCC-3	BCRE-2	NGCE-1	BEC-2	BECE-2	EACC-1	SECE-1	SECE-2	CNCE-1	LEC-1
Macroinvertebrate community											
	990517	990518	990505	990506	990504	990517	990517	990505	990505	990505	990505
# EPT families	8	14	10	8	7	11	9	6	8	10	9
Assessment	Fair	Excellent	Good	Fair	Fair	Good	Good	Fair	Fair	Good	Good
Fish community											
	990720	990721		990720					990721		
Time (min)	30	30		30					30		
Richness measures											
# species	18	15		13					21		
# darter species	3	2		2					3		
# minnow species	6	4		3					9		
# species	4	3		1					3		
# sucker species	0	0		0					1		
# intolerant species	0	0		0					1		
Composition measures											
% sunfish	21.3	18.9		13.4					3.7		
% omnivores and herbivores	0	1.6		17.9					46.1		
% insectivourous cyprinids	40	33.6		47.8					43.6		
% top carnivores	1.3	4.1		0					1.2		
Population measures											
Individuals	75	122		67					401		
# collected per hour	150	244		134					802		
% disease and anomalies	0	0.8		0					0		
IBI Score	44	38		34					44		
Biological Condition	Fair	Poor		Poor					Fair		

Table 8b. List of previous water quality assessments (by basin) conducted on streams within the Conecuh River and Escambia River basins from 1993-1999. Chemical assessments are indicated when biological assessments were not conducted.

Waterbody	*Date(s)*	*Assessment Type**	*Tables and appendices+*
Upper Conecuh River (03140301)			
010 Conecuh River	1996, 1999	C	F-2d, F-5d
020 Conecuh River	1,999	C	F-2d
020 Mannings Creek	1997	C, H	F-3d, F-4d
020 McQuagee Mill Creek (020)	1997	C, H	F-3d, F-4d
020 Double Branch (020)	1998	C, H	F-3d, F-4d
030 Conecuh River	1996, 1999	C	F-3d, F-4d
030 Smilies Mill Creek	2000	C, H	F-3d, F-4d
040 Patsaliga Creek	1996	C	F-5d
040 Conecuh River	1996, 1999	C	F-2d, F-5d
050 Conecuh River	1996	C	F-5d
050 Tributary to Shady Bend Creek	1999	C, H	F-3d, F-4d
Patsaliga River (03140302)			
010 Patsaliga Creek	1999	C, H	F-3d, F-4d
020 Patsaliga Creek	1996, 1998	C, H	F-3d, F-4d, F-5d
050 Patsaliga Creek	1996, 1997	C, H	F-3d, F-4d, F-5d
050 Tributary of Patsaliga Creek	1997	C, H	F-3d, F-4d
050 Pineywoods Creek	1991-1993, 1995, 1998-1999	C, H, M, F	T-6d, T-7d, F-1d
Sepulga River (03140303)			
010 Tributary to Duck Creek	1998	C, H	F-3d, F-4d
020 Tributary of Persimmon Creek	1998	C, H	F-3d, F-4d
030 Persimmon Creek	1999	C	F-2d
030 Tributary of Rocky Creek	1998	C, H	F-3d, F-4d
030 Rocky Creek	1999	C, H, M	T-6d, T-7d, F-2d
030 Deep Step Creek	2000	C, H	F-3d, F-4d
040 Sepulga River	1996	C	F-5d
040 Tributary to Sepulga River	2000	C, H	F-3d, F-4d
050 Fayette Branch	1999	C, H	F-3d, F-4d
060 Pigeon Creek	1999	C, H	F-3d, F-4d
060 Tributary to Hard Labor Creek	2000	C, H	F-3d, F-4d
060 Sepulga River	1996	C	F-5d
Lower Conecuh River (03140304)			
010 Conecuh River	1996, 1997	C, H	F-3d, F-4d, F-5d
010 Crossway Creek	1997	C, H	F-3d, F-4d
010 Poley Creek	1999	C, H	F-3d, F-4d
010 Tributary to Conecuh River	1997-2000	C, H	F-3d, F-4d
010 Tributary to Maye Creek	2000	C, H	F-3d, F-4d
020 Tributary to Murder Creek	2000	C, H	F-3d, F-4d
030 Tributary to Murder Creek	1999	C, H	F-3d, F-4d
050 Burnt Corn Creek	1999	C, H, M	T-6d, T-7d, F-2d
090 Little Escambia Creek	1999	C, H, M	T-6d, T-7d, F-2d
090 Tributary to Little Escambia Creek	1998	C, H	F-3d, F-4d

Table 8b, cont. List of previous water quality assessments (by basin) conducted on streams within the Conecuh River and Escambia River basins from 1993-1999. Chemical assessments are indicated when biological assessments were not conducted.

Waterbody	*Date(s)*	*Assessment Type**	*Tables and appendices+*
Escambia River (03140305)			
020 Big Escambia Creek	1996, 1999	C, H, M	T-6d, T-7d, F-2d, F-5d
030 Sizemore Creek	1996	C	F-5d
040 Big Escambia Creek	1996, 1999	C	F-2d, F-5d
090 Tributary to Hobbs Branch	1998	C, H	F-3d, F-4d

* C=Chemical; H=Habitat; M=Macroinvertebrate; F=Fish

\+ T=tables; F=appendices

Table 9b. Summary of the number of current Construction/Stormwater Authorizations and NPDES permits issued within each sub-watershed. Sub-watersheds with more than five construction/stormwater authorizations are in bold.

Cataloging Unit and Subwatershed	# of Authorizations / #NPDES permits					
	Total Number of Permits and Authorizations	Construction/ Stormwater Authorizations[c]	Mining NPDES[a]	Municipal NPDES[b]	Semi Public/ Private NPDES[b]	Industrial Process Wastewater - NPDES Majors[b]
Upper Conecuh River (0314-0301)						
010	2	2				
020	4	4				
030	**6**	6				
040	3	3				
050	4	3	1			
Patsaliga River (0314-0302)						
010	4	2			2	
020	1	1				
030	3	3				
040	1	1				
050	2	2				
060	2	1			1	
Sepulga River (0314-0303)						
010	1	1				
020	13	4				9
030	12	2				10
040	2	2				
050	4	4				
060	3	2		1		
070	3	2	1			
Lower Conecuh River (0314-0304)						
010	3	3	0	0	0	0
020	3	3				
030	5	3			2	
040	1	1				
050	10	5	5			
060	3	2	1			
070	4	2	1			1
090	6	2	4			
Escambia River (0314-0305)						
010	3	1	2	0	0	0
020	6	2	3		1	
030	6	2	2	1	1	
040	7	3	4			
070	1	1				
090	1	1				
130	2	2				

[a]Source: ADEM Mining and Nonpoint Source Unit, Field Operations, database retrieval (9/14/99)
[b]Source: 1996 CWS Report (ADEM 1999a)
[c]Source: ADEM Mining and Nonpoint Source Unit, Field Operations, database retrieval (9/23/99)

Table 10b. List of stations assessed within the Escambia River basins as part of the SE Alabama NPS screening assessment.

Stream	Station	Sub-watershed	County	T	R	S	Sub-Ecoregion **	Basin Area (mi^2)	Assessment Type*
Patsaliga (0314-0302)									
Pond Creek	PDCC-1	030	Crenshaw	9N	18E	8	65d	14	C,H,M,F
Little Patsaliga	LPCC-4	040	Crenshaw	11N	17E	20	65d	20	C,H,M,F
Cane Creek	CECC-1	040	Crenshaw	9N	17E	16	65d	14	H,M
Trib of Patsaliga Cr	UPCC-1	050	Covington	6N	15E	2	65d	12	C,H,M,F
Lower Conecuh (0314-0304)									
Folley Creek	FYCE-1	010	Escambia	2N	13E	19	65f	3	C,H,M,F
Maye Mill Creek	MMCE-1	010	Escambia	1N	11E	9	65f	8	C,H,M,F
Silas Creek	SSCE-1	010	Escambia	1N	12E	6	65f	24	C,H,M,F
Maye Creek	MYCE-1	010	Escambia	2N	11E	27	65p	4	H,M
Mendan Hall Creek	MHCE-1	010	Escambia	2N	12E	23	65f	9	H,M
Smith Creek	SHCE-1	010	Escambia	2N	12E	1	65f	9	H,M
Jordan Creek	JNCC-1	030	Conecuh	5N	10E	35	65f	9	C,H,M,F
Panther Creek	PRCC-2	030	Conecuh	4N	10E	6	65f	13	C,H,M,F
Panther Creek	PRCC-3	030	Conecuh	4N	10E	23	65f	28	C,H,M,F
Narrow Gap Creek	NGCE-1	090	Escambia	3N	8E	33	65f	11	C,H,M,F
Escambia (0314-0305)									
Big Escambia Creek	BECE-2	020	Escambia	3N	7E	11	65f	140	H,M
Escambia Creek	EACC-1	020	Conecuh	4N	7E	14	65f	43	H,M
Sizemore Creek	SECE-1	030	Escambia	2N	6E	35	65f	22	H,M
Sizemore Creek	SECE-2	030	Escambia	2N	7E	29	65f	79	C,H,M,F
Cowpen Creek	CNCE-1	040	Escambia	1N	7E	11	65f	14	H,M

* Assessment Type: C=Chemical Assessment; H= Habitat Assessment; M=Aquatic Macroinvertebrate; F=Fish Assessment
** Level IV Ecoregions of Alabama (Griffith, et.al. 1999)

Table 11b. List of the 19 waterbodies within the southeastern Alabama study basin on ADEM's draft 2000 CWA §303(d) list. Nonpoint sources and causes of impairment are listed (ADEM 2001b).

Waterbody	Sub-watershed	Miles impaired	Use	Support Status	Nonpoint Sources	Causes of Impairment
Upper Conecuh River (0314-0301)						
Conecuh River	030	24.7	F&W	Non	Non-irrigated crop prod.; Pasture grazing	Siltation; OE/DO
Conecuh River	030	18	S/ F&W	Non	Non-irrigated crop prod.; Flow regulation/ mod.	Siltation; OE/DO
Sepulga River (0314-0303)						
Rocky Creek	030	8	F&W	Non	Unknown source(s)	Unknown toxicity

Table 12b. Summary of assessments conducted within the Escambia basin.

Cataloging Unit and Subwatershed	Station	*Assessment*				Overall Assessment
		Habitat	*Macroinv.*	*Fish*	*Chemical*[a]	
Patsaliga (0314-0302)						
030	PDCC-1	Excellent	Fair	Poor	D	Poor
040	LPCC-4	Good	Fair	Poor	U	Poor
040	CECC-1	Excellent	Fair			Fair
050	PYW-1	Excellent	Fair	Fair	D	Fair
050	UPCC-1	Good	Fair	Fair	U	Fair
Sepulga (0314-0303)						
030	RYC-2[b]	Excellent	Poor		D	Poor
Lower Conecuh (0314-0304)						
010	FYCE-1	Excellent	Poor	Very poor	D	Poor
010	MHCE-1	Excellent	Fair			Fair
010	MMCE-1	Excellent	Fair	Very poor	U	Poor
010	MYCE-1	Excellent	Fair			Fair
010	SHCE-1	Excellent	Good			Good
010	SSCE-1	Excellent	Poor	Very poor	U	Poor
030	JNCC-1	Excellent	Fair	Fair	U	Fair
030	PRCC-2	Excellent	Fair	Poor	D	Fair
030	PRCC-3	Excellent	Excellent	Poor		Good
050	BCRE-2	Excellent	Good		U	Good
090	LEC-1	Excellent	Good		U	Good
090	NGCE-1	Excellent	Fair	Poor	U	Poor
Escambia (0314-0305)						
020	BEC-2	Excellent	Fair		U	Fair
020	BECE-2	Excellent	Good			Good
020	EACC-1	Excellent	Good		U	Good
030	SECE-1	Excellent	Fair			Fair
030	SECE-2	Excellent	Fair	Fair	D	Fair
040	CNCE-1	Excellent	Good			Good

a. U=water quality problems were not detected; water chemistry sampling detected potential water quality problem

b. impairment caused by urban sources

Table 13b. List of priority sub-watersheds identified within the Escambia River Accounting Unit.

Sub-watershed Number	Subwatershed Name	Lowest Station Assessment (Fair / Poor)	Suspected Cause(s)	Suspected nonpoint source(s)
Patsaliga (0314-0302)				
030	Upper Patsaliga Creek	Fair	Nutrients	Animal husbandry, silviculture, pasture runoff
040	Little Patsaliga Creek	Fair	Sedimentation	Animal husbandry, silviculture, pasture runoff
050	Lower Patsaliga Creek	Fair	Sedimentaton, Nutrients	Silviculture, pasture runoff
Lower Conecuh (0314-0304)				
010	Conecuh River	Poor	Nutrient enrichment, sedimentation	Aquaculture, urban development
090	Little Escambia Creek	Fair	Unknown	Unknown
Escambia (0314-0305)				
030	Sizemore Creek	Fair	Nutrients, pathogens	Crop runoff, mining activities, silviculture

References

ACES. 1997. Soil Areas of Alabama. (MAP and Legend Description). Alabama Cooperative Extension System and U.S Dept. of Agriculture- Natural Resources Conservation Service. Auburn, Alabama.

ADEM. 1992a. Alabama Clean Water Strategy Water Quality Assessment Report. Alabama Department of Environmental Management. Montgomery, AL, p. 2.1-2.21.

ADEM. 1992b. Water Quality Report to Congress for Calendar Years 1990 and 1991. Alabama Department of Environmental Management. Montgomery, Alabama.

ADEM. 1994a. Water Quality Report to Congress for Calendar Years 1992 and 1993. Alabama Department of Environmental Management. Montgomery, Alabama.

ADEM. 1994b. Water Quality Trends of Selected Ambient Monitoring Stations in Alabama utilizing Aquatic Macroinvertebrate Assessments: 1974-1992. Alabama Department of Environmental Management. Montgomery, Alabama. 113pp.

ADEM. 1996a. Alabama NPS management program: Chapter 11—The Nonpoint Source River Basin and Watershed Management Approach. Alabama Department of Environmental Management. Montgomery, AL.

ADEM. 1996b. Trends in Water Quality of Ambient Monitoring Stations of the Coosa and Tallapoosa Watersheds: Aquatic Macroinvertebrate Bioassessments. 1980-1995. Field Operations Division. Alabama Department of Environmental Management. Montgomery, AL.

ADEM. 1996c. Water Quality Report to Congress for Calendar Years 1994 and 1995. Alabama Department of Environmental Management. Montgomery, Alabama.

ADEM. 1996d. Reservoir Water Quality and Fish Tissue Monitoring Program Report: 1994-1995. Alabama Department of Environmental Management. Montgomery, Alabama.

ADEM. 1997a. ADEM's Strategy for Sampling Environmental Indicators of Surface Water Quality Status (ASSESS). Environmental Indicators Section. Field Operations Division. Alabama Department of Environmental Management. Montgomery, AL.

ADEM. 1997b. Water Quality Criteria and Water Use Classifications for Interstate and Intrastate Waters. Chapters 335-6-10 and 335-6-11. Alabama Department of Environmental Management. Montgomery, AL.

ADEM. 1998. Water Quality Report to Congress for Calendar Years 1996 and 1997. Alabama Department of Environmental Management. Montgomery, Alabama.

ADEM. 1999a. Alabama Clean Water Strategy Water Quality Assessment Report (1996). Alabama Department of Environmental Management. Montgomery, AL

ADEM. 1999b. ADEM Administrative Code chapter 335-6-7 (CAFO Program Rules). Alabama Department of Environmental Management. Montgomery, AL

ADEM. 1999c. Alabama's 1998 CWA §303(d) list of impaired waters. Alabama Department of Environmental Management. Montgomery, AL.

ADEM. 1999d. Monitoring of Watersheds associated with Alabama State Parks utilizing chemical, physical and biological assessments. Environmental Indicators Section. Field Operations Division. Alabama Department of Environmental Management

ADEM. 1999e. Mining and Construction Stormwater Database Retrievals. Mining and Nonpoint Source Section. Alabama Department of Environmental Management. Montgomery, AL. (updated July 2000)

ADEM. 1999f. Standard Operating Procedures and Quality Control Assurance Manual Volume II – Freshwater Macroinvertebrate Biological Assessment. Field Operations Division Alabama Department of Environmental Management. Montgomery, Alabama.

ADEM. 1999h. Surface Water Quality Screening Assessment of the Black Warrior River Basin, Alabama. Field Operations Division. Alabama Department of Environmental Management. Montgomery, AL.

ADEM. 1999i. Analysis Guidelines for the MB-EPT Aquatic Macroinvertebrate Bioassessment Method and Habitat Assessment (Draft). Field Operations Division. Alabama Department of Environmental Management. Montgomery, AL.

ADEM. 1999j. Quality assurance manual for the Alabama Department of Environmental Management Central Laboratory. Field Operations Division, Alabama Department of Environmental Management. Montgomery, Alabama.

ADEM. 2000a. Ecoregional reference site data collected by ADEM from 1992 to 2000 (unpublished). Field Operations Division. Alabama Department of Environmental Management. Montgomery, AL.

ADEM. 2000b. Alabama Monitoring and Assessment Program (ALAMAP) data collected by ADEM 1997 to 2000 (unpublished). Field Operations Division. Alabama Department of Environmental Management. Montgomery, AL.

ADEM. 2000c. Water quality monitoring data collected by ADEM in support of CWA §303(d) listing and de-listing decisions 1999-2000 (unpublished). Field Operations Division. Alabama Department of Environmental Management. Montgomery, AL.

ADEM. 2000d. Water quality monitoring data from tributaries of the Coosa River basin reservoirs collected by ADEM (2000, unpublished). Field Operations Division. Alabama Department of Environmental Management. Montgomery, AL.

ADEM. 2000e. Aquatic Macroinvertebrate Bioassessment Quality Assurance/Quality Control Assessments 1991 to 2001. Field Operations Division. Alabama Department of Environmental Management. Montgomery, AL.

ADEM. 2000f. Standard Operating Procedures and Quality Assurance Manual Volume I -- Physical/Chemical. Field Operations Division. Alabama Department of Environmental Management. Montgomery, AL. (previous version - 1994)

ADEM. 2000g. Surface Water Quality Screening Assessment of the Tennessee River Basin, Alabama. Field Operations Division. Alabama Department of Environmental Management. Montgomery, AL.

ADEM. 2000h. ADEM Water Quality Assessment Methodology. Alabama Department of Environmental Management. Montgomery, Alabama.

ADEM. 2001a. Alabama Nonpoint Source Pollution Program Annual Report. Office of Education and Outreach. Alabama Department of Environmental Management. Montgomery, Alabama.

ADEM. 2001b. Alabama's 2000 CWA §303(d) List of Impaired Waters. Alabama Department of Environmental Management. Montgomery, AL.

ADEM. 2001c. Concentrated Animal Feeding Operations (CAFO) Database Retrieval. Mining and Nonpoint Source Section. Alabama Department of Environmental Management. Montgomery, AL.

ADEM. 2002a. Nonpoint source screening assessment of the southeast Alabama River basins-1999: Chattahoochee and Chipola River basins. Field Operations Division, Alabama Department of Environmental Management. Montgomery, AL.

ADEM. 2002b. Nonpoint source screening assessment of the southeast Alabama River basins-1999: Choctawhatchee River basin. Field Operations Division, Alabama Department of Environmental Management. Montgomery, AL.

ASWCC. 1998. Conservation Assessment worksheets completed by Local Soil and Water Conservation Districts. Alabama Soil and Water Conservation Committee. Montgomery, AL.

Barbour, M.T. and J.B. Stribling. 1991. Use of Habitat Assessment in Evaluating the Biological Integrity of Stream Communities, In: Biological Criteria: Research and Regulation. pp. 25-38. EPA-440/5-91-005. EPA. Office of Water. Washington, DC.

Barbour, M.T. and J.B Stribling. 1994. A Technique for Assessing Stream Habitat Structure. In Proceedings of the conference "Riparian ecosystems of the humid United States: function, values, and management." National Association of Conservation Districts. Washington, D.C. pp. 156-178.

Barbour, M.T., J.L. Plafkin, B.P. Bradley, C.G. Graves, and R.W. Wissemen. 1992. Evaluation of EPA's Rapid Bioassessment Benthic Metrics: Metric Redundance and Variability among Reference Stream Sites. Environmental Toxicology and Chemistry. 11:437-449.

EPA. 1997a. Monitoring Guidance for Determining the Effectiveness of Nonpoint Source Controls. U.S. Environmental Protection Agency. Office of Water. EPA 841-B-96-004.

EPA. 1997b. Revision to Rapid Bioassessment Protocols for Use in Streams and Rivers: Periphyton, Benthic Macroinvertebrates, and Fish (Draft). U.S. Environmental Protection Agency. Office of Water. EPA 841-D-97-002.

EPA. 1997c. EROS Land Cover Data Set: South-Central Portion Version 1. U.S. Environmental Protection Agency

Griffith, G.E., J. M. Omernik, J.A. Comstock, S. Lawrence, G. Martin, A. Goddard, V.J. Hulcher, T. Foster. 2001. Ecoregions of Alabama and Georgia (Color poster with map, descriptive text, summary tables, and photographs). U. S. Geological Survey. Reston, Virginia (Map Scale 1:1,700,000)

Karr, J.R., Fausch, K.D., Angermeier, P.L., Yant, P.R., and Schlosser, I.J. 1986. Assessing Biological Integrity in Running Waters: A Method and its Rationale. Illinois Natural History Survey Special Publication 5. 28pp.

Mettee, M.F., O'Neil, P.E., and Pierson, J.M. 1996. Fishes of Alabama and the Mobile basin. Oxmoor House. Birmingham, Alabama. 820pp.

Mulholland, P.J., and Lenat, D.R. 1992. Streams of the Southeastern Piedmont, Atlantic Drainage. *In*: C.T. Hanckney et. al, eds. Biodiversity of the Southeastern United States—Aquatic Communities. Wiley and Sons. pp. 193-233.

National Research Council. 1992. Restoration of Aquatic Ecosystems: Science, Technology, and Public Policy. National Academy Press. Washington, D.C.

NRCS. 1997. Soil Areas of Alabama. (Map and legend description). U.S. Department of Agriculture-Natural Resources Conservation Service. Auburn, Alabama.

O'Neil, P.E., and T.E. Shepard. 1998. Standard operating procedure manual for sampling freshwater fish communities and application of the index of biotic integrity for assessing biological condition of flowing, wadeable streams in Alabama. ADEM Contract No. AGY7042. Geological Survey of Alabama. Tuscaloosa, Alabama.

Omernik, J.M. 1987. Ecoregions of the Conterminous United States. Annals of the Association of American Geographers. 77(1):118-125.

Omernik, J.M. 1995. Ecoregions: A Spatial Framework for Environmental Management. In: W.S. Davis and T.P. Simon [eds.] Biological Assessment and Criteria: tools for water resource planning and decision making. Lewis Publishers. Boca Raton FL. 415pp.

Omernik, J.M. 1996. Level III Ecoregion of the Continental United States (Revised Map). National Health and Environmental Effects Research Laboratory. U.S. Environmental Protection Agency. Corvallis, OR.

Omernik, J.M. and G.E. Griffith. 1991. Ecological Regions versus Hydrologic Units: Frameworks for Managing Water Quality. J. Soil and Water Cons. 46(5): 334 - 340.

Trimble, S.W. 1974. Man-induced Soil Erosion on the Southern Piedmont. 1700-1970. Ankeny, Ia. Soil Conservation Society of America. 180pp.

Troy State University. 1997. Water Quality in the Alabama Portion of the Choctawhatchee-Pea River Watershed. Center for Environmental Research and Science. Troy State University. Troy, Alabama

USDASCS. 1995. State of Alabama hydrologic unit map with drainage areas by counties and sub-watersheds. U.S. Department of Agriculture and Soil Conservation Service. Auburn, Alabama.

APPENDICES

Appendix A-1. Landuse percentages for Southeast Alabama cataloging units. Estimates are based on EPA landuse subcategory data (EPA 1997).

	Percent Total Landuse (Category and Subcategory)													
	Open Water	Urban			Mining	Forest				Pasture/ Hay	Row Crops	Other		
Sub-watershed	Open Water	Low Intensity Residential	High Intensity Residential	High Intensity Commercial/ Industrial/ Transportation	Quarries/ Strip Mines/ Gravel Pits	Transitional Forest	Deciduous Forest	Evergreen Forest	Mixed Forest	Pasture/ Hay	Row Crops	Other Grasses	Woody Wetlands	Herbaceous Wetlands
Yellow River (0314 - 0103)														
010	<1	<1	<1	<1	0	<1	18	16	29	10	23	<1	4	<1
020	3	1	<1	<1	<1	<1	22	14	26	10	21	<1	4	<1
030	1	0	0	<1	0	<1	12	13	21	15	33	0	5	<1
040	<1	<1	<1	<1	0	<1	15	15	27	13	24	<1	6	<1
050	<1	1	<1	<1	0	1	11	34	23	12	14	<1	4	<1
060	<1	<1	0	<1	<1	2	4	70	16	3	3	<1	2	<1
070	<1	0	0	<1	0	6	10	47	18	8	7	0	5	<1
080	<1	1	<1	<1	<1	1	10	34	23	11	12	<1	7	<1
090	<1	<1	0	<1	0	2	9	46	14	9	12	<1	7	<1
110	2	0	0	0	0	0	4	57	10	15	9	<1	2	<1
190	2	2	<1	1	1	3	9	34	15	14	16	1	2	<1
Blackwater (0314 - 0104)														
010	<1	<1	0	<1	0	3	5	67	15	5	4	<1	1	<1
040		0	0	0	0	0	16	0	2	38	44	0	0	0
080	<1	<1	0	<1	0	<1	2	64	14	4	11	0	4	0
100	3	<1	0	<1	<1	1	7	66	13	3	4	0	2	0
140		<1	0	0	0	2	2	65	18	4	9	0	0	0
170		<1	0	<1	0	0	16	1	4	10	68	<1	0	0

Appendix A-1, Cont. Landuse percentages for Southeast Alabama cataloging units. Estimates are based on EPA landuse subcategory data (EPA 1997).

	Percent Total Landuse (Category and Subcategory)													
	Open Water	Urban			Mining	Forest				Pasture/ Hay	Row Crops	Other		
Sub-watershed	Open Water	Low Intensity Residential	High Intensity Residential	High Intensity Commercial/ Industrial/ Transportation	Quarries/ Strip Mines/ Gravel Pits	Transitional Forest	Deciduous Forest	Evergreen Forest	Mixed Forest	Pasture/ Hay	Row Crops	Other Grasses	Woody Wetlands	Herbaceous Wetlands
Perdido (0314 - 0106)														
010	<1	<1	<1	<1	0	2	7	30	15	17	24	<1	3	<1
020	<1	<1	0	<1	0	3	7	40	21	9	8	<1	12	<1
040	<1	<1	<1	<1	0	2	6	58	18	6	5	<1	4	<1
050	<1	0	0	<1	0	4	1	66	14	1	1	0	13	<1
060	<1	7	3	2	0	0	10	3	7	36	30	3	1	<1
070	<1	1	<1	1	0	<1	12	20	15	26	20	1	3	<1
100	<1	0	0	<1	0	8	5	59	15	4	2	0	7	<1
110	<1	<1	0	<1	<1	19	5	46	17	3	2	0	7	<1
140	<1	0	0	<1	<1	2	4	60	18	5	4	0	7	<1
150	1	0	0	<1	0	6	3	55	12	5	2	1	16	<1
170	<1	<1	<1	<1	0	6	7	53	15	7	5	<1	6	<1
180	1	<1	0	1	<1	1	8	40	12	15	15	<1	7	<1
190	1	<1	<1	<1	<1	1	5	18	7	34	17	1	14	1
Perdido Bay (0314 - 0107)														
020	27	<1	<1	<1	2	2	24	4	<1	22	8	1	8	1
030	4	1	<1	<1		<1	3	15	3	45	9	2	17	1
040	17	1	<1	3	6	3	20	6	4	17	7	3	12	3

Appendix A-1, Cont. Landuse percentages for Southeast Alabama cataloging units. Estimates are based on EPA landuse subcategory data (EPA 1997).

	Percent Total Landuse (Category and Subcategory)													
	Open Water	Urban			Mining	Forest				Pasture/ Hay	Row Crops	Other		
Sub-watershed	Open Water	Low Intensity Residential	High Intensity Residential	High Intensity Commercial/ Industrial/ Transportation	Quarries/ Strip Mines/ Gravel Pits	Transitional Forest	Deciduous Forest	Evergreen Forest	Mixed Forest	Pasture/ Hay	Row Crops	Other Grasses	Woody Wetlands	Herbaceous Wetlands
Upper Conecuh (0314 - 0301)														
010	<1	<1	<1	<1	<1	1	22	24	33	5	8	<1	7	<1
020	<1	<1	<1	<1	<1	1	21	25	32	4	8	<1	7	<1
030	1	<1	<1	<1	<1	3	16	20	25	10	15	<1	10	<1
040	2	<1	<1	<1	<1	1	14	31	34	34	6	7	0	4
050	1	<1	<1	<1		2	10	41	25	7	8	<1	5	<1
Patsaliga (0314 - 0302)														
010	<1	<1	<1	<1	<1	2	22	22	28	5	12	<1	10	<1
020	<1	<1	<1	<1	<1	1	22	21	36	5	7	<1	8	<1
030	<1	1	<1	<1	0	1	20	15	24	10	14	<1	14	<1
040	<1	<1	<1	<1	<1	3	23	15	30	9	13	<1	7	<1
050	<1	<1	<1	<1	<1	3	11	41	29	4	6	<1	6	<1
060	<1	<1	<1	<1	<1	<1	19	27	28	9	16	<1	1	<1
Sepulga (0314 - 0303)														
010	<1	<1	<1	<1	<1	3	10	52	27	2	2	<1	3	<1
020	<1	1	<1	1	<1	1	22	25	35	5	5	1	4	<1
030	<1	<1	<1	<1	<1	6	11	46	26	3	3	<1	4	<1
040	<1	<1	<1	<1	<1	6	10	39	30	6	6	<1	2	<1
050	<1	<1	<1	<1	<1	2	19	25	29	7	8	<1	9	<1
060	<1	<1	<1	<1	<1	2	11	40	26	6	9	<1	6	<1
070	<1	<1	<1	<1	0	1	10	42	33	4	5	<1	4	<1

Appendix A-1, Cont. Landuse percentages for Southeast Alabama cataloging units. Estimates are based on EPA landuse subcategory data (EPA 1997).

	Percent Total Landuse (Category and Subcategory)													
	Open Water	Urban			Mining	Forest				Pasture/ Hay	Row Crops	Other		
Sub-watershed	Open Water	Low Intensity Residential	High Intensity Residential	High Intensity Commercial/ Industrial/ Transportation	Quarries/ Strip Mines/ Gravel Pits	Transitional Forest	Deciduous Forest	Evergreen Forest	Mixed Forest	Pasture/ Hay	Row Crops	Other Grasses	Woody Wetlands	Herbaceous Wetlands
Lower Conecuh (0314 - 0304)														
010	1	<1	<1	<1	<1	2	6	55	20	4	3	<1	8	1
020	<1	<1	<1	<1	<1	3	12	39	30	5	7	<1	2	<1
030	<1	1	<1	<1	<1	<1	12	35	26	8	9	<1	7	<1
040	<1	<1	<1	<1	<1	1	7	47	31	3	4	<1	7	<1
050	<1	<1	<1	<1	<1	2	9	44	25	6	7	<1	5	<1
060	1	1	<1	1	1	2	11	49	19	4	3	<1	7	1
070	2	<1	<1	<1	<1	<1	7	33	14	13	11	<1	17	2
090	<1	<1	<1	<1	<1	4	8	59	16	6	6	<1	1	<1
Escambia (0314 - 0305)														
010	<1	<1	<1	<1	<1	3	12	19	14	23	22	<1	5	<1
020	<1	<1	<1	<1	<1	9	8	51	16	5	5	<1	4	<1
030	<1	<1	<1	<1	<1	4	8	29	14	26	17	<1	2	<1
040	<1	<1	<1	<1	2	3	8	42	16	14	10	<1	3	<1
070	<1	2	<1	1	<1	<1	29	9	27	11	11	10	<1	<1
090	<1	<1	<1	<1	<1	<1	6	15	13	37	26	<1	2	1
130	<1	6	1	2	<1	<1	5	5	4	41	32	2	<1	<1

APPENDIX A-2

EROS Land Cover Data Set

--South-Central Portion of EPA Region IV--

VERSION 1

INTRODUCTION

The main objective of this project was to generate a generalized and consistent (i.e. seamless) land cover data layer for the South-central portion of EPA Region IV, which includes most of Alabama, Western Georgia, Eastern Mississippi, and the Florida Panhandle. This data set was developed by personnel at the EROS Data Center (EDC), Sioux Falls, SD. The project was initiated during the summer of 1997, and a first draft product was completed in November, 1997 (Version 1). The write-up that follows pertains to Version 1. Questions about the data set can be directed to Terry Sohl (EDC; email sohl@edcmail.cr.usgs.gov; telephone 605-594-6537).

GENERAL PROCEDURES

Data sources: The primary source of data for this project was leaves-off (primarily spring) Landsat TM data, acquired in 1988, 1990, 1991, 1992 and 1993. While most of the leaves-off data sets were acquired in spring, a few were from late autumn due to the difficulties in acquiring cloud-free TM data. These data sets were referenced to Albers Conical Equal Area coordinates (see table 1). Additionally, leaves-on (summer) TM data sets were acquired and referenced. The south-central and north-central portions of Region IV were processed as one unit and later split for distribution purposes; in total, 40 TM scenes were analyzed. Data sets used are provided in Table 2. In addition, other intermediate scale spatial data were acquired and utilized. These included 3-arc second Digital Terrain Elevation Dataset (DTED) and derivative DTED products (slope, shaded relief, and relative elevation), population density and housing units density data at the census block level, USGS land use and land cover data (LUDA), National Wetlands Inventory (NWI) data, and STATSGO soils information (available water and organic carbon).

Methods: The general procedure of this project was to (1) mosaic multiple spring TM scenes and classify them using an unsupervised classification algorithm, (2) interpret and label classes into sixteen land cover categories using aerial photographs as reference data, (3) resolve

confused classes using the appropriate ancillary data source(s), and (4) incorporate land cover information from leaves-on TM data, NWI data, and other data sources to refine and augment the "basic" classification developed above. The entire area (north-central and south-central portions of Region IV) was analyzed as one large mosaic consisting of 20 leaves-off scenes. For mosaicing purposes, a base scene was selected, and other scenes were normalized to mimic spectral properties of the base scene following histogram equalization using pixels in regions of spatial overlap.

Following mosaicing, mosaiced scenes were clustered into 100 spectrally distinct classes using the Cluster algorithm developed by Los Alamos [1]. Clusters were assigned into Anderson level 1 and 2 land cover classes using National High Altitude Photography program (NHAP) aerial photographs as reference information. Almost invariably, individual spectral classes were confused between/among two or more "targeted" land cover classes. Separation of spectral classes into meaningful land cover units was accomplished using ancillary data. Briefly, for a given confused spectral class, digital values of the various ancillary data layers were compared to determine: (1) which data layers were the most effective for splitting the confused class into the appropriate land cover units, and (2) the appropriate thresholds for splitting the classes. Models were then developed using one to several data sets to split each confused class into the desired land cover categories. As an example, a spectral class might be confused between row crop and high-intensity residential areas. In order to split this particular class into more meaningful land cover units, population density and housing units density data were assessed to determine if they could be used to split the class into the respective categories, and if so, to define the appropriate thresholds to be used in the class splitting model.

Following the above class splitting steps, a "first order" classification product was constructed from the clustered leaves-off data. Leaves-on data were then clustered with the goal of refining certain land cover features not easily discriminated using leaves-off TM data. Land cover classes that were spatially but not spectrally distinct in the leaves-off data (barren areas, clearcuts) were digitized off the screen from the leaves-on data. These digitized data layers were used in conjunction with clustered leaves-on data to define barren and cleared areas that were then incorporated into the classification product. A digitized layer outlining wetland areas was also used to refine the wetlands information. "Other grasses", consisting largely of parks, urban lawns, and golf courses, were defined at this point by using hand-digitized information and

LUDA urban information to separate "other grasses" from "hay/pasture". Similarly, high-intensity residential and high-intensity commercial/industrial areas were separated by using a threshold in the population density data.

The resulting classification (Version 1) includes the following. Please note that not all classes were used for this region:

Water

- 11 Open Water
- 12 Perennial Ice/Snow

Developed

- 21 Low Intensity Residential
- 22 High Intensity Residential
- 23 High Intensity Commercial/Industrial/Transportation

Barren

- 31 Bare Rock/Sand
- 32 Quarries/Strip Mines/Gravel Pits
- 33 Transitional

Natural Forested Upland (non-wet)

- 41 Deciduous Forest
- 42 Evergreen Forest
- 43 Mixed Forest

Natural Shrubland

- 51 Deciduous Shrubland
- 52 Evergreen Shrubland
- 53 Mixed Shrubland

Non-Natural Woody

- 61 Planted/Cultivated (orchards, vineyards, groves)

Herbaceous Upland Natural/Semi-Natural Vegetation

- 71 Grassland/Herbaceous

Herbaceous Planted/Cultivated

- 81 Pasture/Hay
- 82 Row Crops

83 Small Grains

84 Bare Soil

85 Other Grasses (Urban/recreational; e.g. parks, lawns, golf courses)

Wetlands

91 Woody Wetlands

92 Herbaceous Wetlands

Current definitions of the classes are as follows; percentages given must be viewed as guidelines.

Water - All areas of open water or permanent ice/snow cover

Water - all areas of open water, generally with less than 25% cover of vegetation/land cover.

Perennial Ice/Snow - all areas characterized by yearlong surface cover of ice and/or snow.

Developed - areas characterized by high percentage (approximately 30% or greater) of construction materials (e.g. asphalt, concrete, buildings, etc).

Low Intensity Residential - Land includes areas with a mixture of constructed materials and vegetation or other cover. Constructed materials account for 30-80 percent of the total area. These areas most commonly include single-family housing areas, especially suburban neighborhoods. Generally, population density values in this class will be lower than in high intensity residential areas.

High Intensity Residential - Includes heavily built-up urban centers where people reside. Examples include apartment complexes and row houses. Vegetation occupies less than 20 percent of the landscape. Constructed materials account for 80-100 percent of the total area. Typically, population densities will be quite high in these areas.

High-Intensity Commercial/Industrial/Transportation - Includes all highly developed lands not classified as High Intensity Residential, most of which is Commercial/Industrial/Transportation.

Barren - Bare rock, sand, silt, gravel, or other earthen material with little or no vegetation regardless of its inherent ability to support life. Vegetation, if present, is more widely spaced and scrubby than that in the vegetated categories.

Bare Rock / Sand - Includes areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, and other accumulations of rock without vegetative cover.

Quarries / Strip Mines / Gravel Pits - Areas of extractive mining activities with significant surface expression.

Transitional - Areas dynamically changing from one land cover to another, often because of land use activities. Examples include forestlands cleared for timber, and may include both freshly cleared areas as well as areas in the earliest stages of forest regrowth.

Natural Forested Upland (non-wet) - A class of vegetation dominated by trees generally forming > 25 percent canopy cover.

Deciduous Forest - Areas dominated by trees where 75 percent or more of the tree species shed foliage simultaneously in response to an unfavorable season.

Evergreen Forest - Areas dominated by trees where 75 percent or more of the tree species maintain their leaves all year. Canopy is never without green foliage.

Mixed Forest - Areas dominated by trees where neither deciduous nor evergreen species represent more than 75 percent of the cover present. Natural Shrubland - A class of vegetation defined by areas dominated by shrubs generally less than 6 meters tall with individuals or clumps not touching to interlocking. The species may include true shrubs or trees and shrubs that are small or stunted because of environmental conditions. Shrub canopy cover is generally greater than 25 percent when tree canopy is less than 25 percent. Shrub cover may be less than 25 percent if cases when the cover of each other life form (herbaceous, tree) is less than 25 percent and shrubs exceed the cover of the other life forms. Not currently represented in the central portion of the EPA Region IV data set.

Deciduous Shrubland - Areas dominated by shrubs where 75 percent or more of the shrub species shed foliage simultaneously in response to an unfavorable season.

Evergreen Shrubland - Areas dominated by shrubs where 75 percent or more of the shrub species maintain their leaves all year. Canopy is never without green foliage.

Mixed Shrubland - Areas dominated by shrubs where neither deciduous nor evergreen species represent more than 75 percent of the cover present. Non-Natural Woody - Areas dominated by non-natural woody plant species such as orchards, vineyards, and groves. The classification of

Non-Natural Woody is subject to availability of sufficient ancillary data to differentiate from natural woody vegetation. Not currently represented in the central portion of the EPA Region IV data set.

Planted / Cultivated - Orchards, Vineyards, and tree plantations planted for the production of fruit, nuts, fiber (wood), or ornamental. Herbaceous Upland Natural/Semi-Natural Vegetation - Areas comprised of natural or semi-natural upland herbaceous vegetation.

Grassland/Herbaceous - A class of vegetation dominated by natural upland grasslands, i.e. neither planted nor cultivated by humans, as well as other non-woody plants known as herbs (graminoids, Forbes, and ferns). The grasses/herbs generally form at least 25 percent cover. Trees and shrubs generally have less than 25 percent cover. In rare cases, herbaceous cover is less than 25 percent but exceeds the combined cover of other life forms present.

Herbaceous Planted / Cultivated - Areas dominated with vegetation which has been planted in its current location by humans, and/or is treated with annual tillage, a modified conservation tillage, or other intensive management or manipulation. The majority of vegetation in these areas is planted and/or maintained for the production of food, feed, fiber, or seed.

Pasture / Hay - Grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops.

Row Crops - All areas used for the production of crops, such as corn, soybeans, vegetables, tobacco, and cotton.

Small Grains - All areas used for the production of graminoid crops such as wheat and rice. Not represented in the central portion of the EPA Region IV data set.

Bare Soil - Areas within planted or cultivated regions that have been tilled or plowed and do not exhibit any visible cover of vegetation. Not represented in the central portion of the EPA Region IV data set.

Other Grasses - Vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes. Examples include parks, lawns, and golf courses.

Wetlands - Non-woody or woody vegetation where the substrate is periodically saturated with or covered with water as defined by Cowardin et al. [2].

Woody Wetlands - Areas of forested or shrubland vegetation where the soil or substrate is periodically saturated with or covered with water as defined by Cowardin et al. [2].

Emergent Woodlands - Non-woody vascular perennial vegetation where the soil or substrate is periodically saturated with or covered with water as defined by Cowardin et al. [2].

CAVEATS AND CONCERNS

While we believe that the approach taken has yielded a very good general land cover classification product for a very large region, it is important to indicate to the user where there might be some potential problems. The biggest concerns are listed below:

1) Quantitative accuracy checks have yet to be conducted. We plan to make comparisons with existing data sets in order to develop a general overview regarding the quality of the land cover data set developed. Feedback from users of the data will be greatly appreciated.

2) Some of the leaves-off data sets were not temporally ideal. In this project, leaves-off data sets are heavily relied upon for discriminating between hay/pasture and row crop, and also for discriminating between forest classes. The success of discriminating between these classes using leaves-off data sets hinges on the time of data acquisition. When hay/pasture areas are non-green, they are not easily distinguishable from other agricultural areas using remotely sensed data. However, there is a temporal window during which hay and pasture areas green up before most other vegetation (excluding evergreens, which have different spectral properties); during this window these areas are easily distinguishable from other crop areas. The discrimination between evergreen and deciduous forest is likewise optimized by selecting data in a temporal window where deciduous vegetation has yet to leaf out. Due to double-cropping practices and the long-growing season in this portion of the country, it's difficult to acquire a single-date of imagery that adequately differentiates between both deciduous/conifer and hay-pasture/row crop.

3) The data sets used cover a range of years, and changes that have taken place across the landscape over the time period may not have been captured. While this is not viewed as a major problem for most classes, it is possible that some land cover features change more rapidly than might be expected (e.g. hay one year, row crop the next).

4) Wetlands classes are extremely difficult to extract from Landsat TM spectral information alone. The use of ancillary information such as National Wetlands Inventory (NWI) data is highly desirable. NWI data were not available in digital format for much of this area. Manual digitizing was used in combination with spectral information to derive much of the wetlands information, a procedure that isn't able to provide the level of detail of NWI data. It is suspected that forested wetlands are underestimated in areas where NWI wasn't available.

5) Accurate definition of the transitional barren class was extremely difficult. The majority of pixels in this class correspond to clear-cut forests in various stages of regrowth. Spectrally, fresh clear-cuts are very similar to row-crops in the leaves-off data. Manual correction of coding errors was performed to improve differentiation between row-crops and clear-cuts, but some errors may still be found. As regrowth occurs in a clear-cut region, the definition of transitional barren verses a forested class becomes problematic. An attempt was made to classify only fresh clear-cuts or those in the earliest stages of regrowth, but there are likely forested regions classed as transitional barren and vice versa.

6) Due to the confusion between clear-cuts, regrowth in clear-cuts, forested areas, and shrublands, no attempts were made to populate the shrubland classes. Any shrubland areas that exist in this area are classed in their like forest class, i.e. deciduous shrubland is classed as deciduous forest, etc.

ACKNOWLEDGMENTS

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REFERENCE

[1] Kelly, P.M., and White, J.M., 1993. Preprocessing remotely sensed data for efficient analysis and classification, Applications of Artificial Intelligence 1993: Knowledge-Based Systems in Aerospace and Industry, Proceedings of SPIE, 1993, 24-30.

[2] Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe, 1979. Classification of Wetlands and Deepwater Habitats of the United States, Fish and Wildlife Service, U.S. Department of the Interior, Washington, D.C.

Table C-1. Projection Information

The initial Landsat TM mosaics, all ancillary data sets, and the final classification product are all map-registered to an Albers Conical Equal Area projection. The following represents projection information for the final classification product:

Projection: Albers Conical Equal Area
Datum: NAD83
Spheroid: GRS80
Standard Parallels: 29.5 degrees North Latitude 45.5 degrees North Latitude
Central Meridian: 96 degrees West Longitude
Origin of the Projection: 23 degrees North Latitude
False Easting: 0 meters
False Northing: 0 meters
Number of Lines: 17220
Number of Samples: 21773
Number of Bands: 1
Pixel size: 30 X 30 meters
Upper Left Corner: 591953 meters (X), 1301000 meters (Y)
Upper Right Corner: 1245113 meters (X), 1301000 meters (Y)
Lower Left Corner: 591953 meters (X), 784430 meters (Y)
Lower Right Corner: 1245113 meters (X), 784430 meters (Y)

Table C-2. MRLC Landsat thematic mapper (TM) data sets used to develop north-central and south-central portions of the EPA Region IV data set.

No asterisk represents scenes used in south-central portion only
* Represents scenes used in north-central portion only.
** Represents scenes used in both the north-central and south-central portion

Path/Row	Date	EOSAT-ID
19/33	12/14/90	5019033009034810*
19/33	09/20/94	5019033009426310*
19/34	10/03/93	5019034009327610*
19/34	11/20/93	5019034009332410*
19/35	11/12/90	5019035009031610*
19/35	09/30/92	5019035009227410*
19/36	09/28/91	5019036009127110**
19/36	11/17/92	5019036009232210**
19/37	03/09/93	5019037009306810
19/37	10/03/93	5019037009327610
19/38	02/16/91	5019038009104710
19/38	10/03/93	5019038009327610
19/39	02/16/91	5019039009104710
19/39	10/03/93	5019039009327610
20/33	08/02/91	5020033009121410*
20/33	11/22/91	5020033009132610*
20/34	11/29/88	5020034008833410*
20/34	08/02/91	5020034009121410*
20/35	11/29/88	5020035008833410*
20/35	10/07/92	5020035009228110*
20/36	03/11/91	5020036009107010**
20/36	07/22/93	5020036009320310**
20/37	11/29/88	5020037008833410
20/37	10/23/92	5020037009229710
20/38	02/10/92	5020038009204110
20/38	10/23/92	5020038009229710
20/39	01/22/91	5020039009102210
20/39	11/06/91	5020039009131010
21/34	04/05/92	5021034009209610*
21/34	10/14/92	5021034009228810*
21/35	04/05/92	5021035009209610*
21/35	08/30/93	5021035009324210*
21/36	09/10/91	5021036009125310**
21/36	12/15/91	5021036009134910**
21/37	02/03/93	5021037009303410
21/37	10/01/93	5021037009327410
21/38	02/14/91	5021038009104510
21/38	10/12/91	5021038009128510
21/39	09/26/91	5021039009126910
21/39	02/01/92	5021039009203210

Appendix B-1. Riffle-run habitat assessment used by ADEM.

ADEM-FIELD OPERATIONS-ECOLOGICAL STUDIES
RIFFLE/RUN HABITAT ASSESSMENT FIELD DATA SHEET

Name of Waterbody _____ Date: _____
Station Number _____ Investigators _____

Habitat Parameter	Category			
	Optimal	Suboptimal	Marginal	Poor
1 **Instream Cover**	>50% mix of boulder, cobble, submerged logs, undercut banks, or other stable habitat.	50-30% mix of boulder, cobble, or other stable habitat; adequate habitat.	30-10% mix of boulder, cobble, or other stable habitat; habitat availability less than desirable.	<10% mix of boulder, cobble, or other stable habitat; lack of habitat is obvious.
Score _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2 **Epifaunal surface**	Well developed riffle and run; riffles as wide as stream and length extends 2x the width of stream; abundance of cobble.	Riffle is as wide as stream but length is <2 times width; abundance of cobble; boulders and gravel common.	Run area may be lacking; riffle not as wide as stream and its length is <2 times the stream width; gravel or large boulders and bedrock prevalent; some cobble present.	Riffles or run virtually non existent; large boulders and bedrock prevalent; cobble lacking.
Score _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3 **Embeddedness**	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble and boulder particles are >75% surrounded by fine sediment.
Score _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4 **Velocity/Depth Regimes**	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-shallow, fast-deep).	Only 3 of 4 regimes present. (if fast-shallow is missing, score lower.)	Only 2 of 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/depth regime (usually slow-deep).
Score _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5 **Channel Alteration**	No Channelization or dredging present.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization (>20 years) may be present, but not recent.	New embankments present on both banks; and 40 - 80% of stream reach is channelized and disrupted.	Banks shored with gabion or cement; >80% of the stream reach channelized and disrupted.
Score _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6 **Sediment Deposition**	Little or no enlargement of islands or point bars and less than 5 % of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from coarse gravel; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel coarse sand on old and new bars; 30-50% of the bottom affected; sediment deposits at obstruction, constriction,, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; > 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
Score _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7 **Frequency of Riffles**	Occurrence of riffles relatively frequent; distance between riffles divided by stream width equals 5-7; variety of habitat.	Occurrence of riffles relatively infrequent; distance between riffles divided by the stream width equals 7-15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided stream width is 15-25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by stream width >25.
Score _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8 **Channel flow Status**	Water reaches base of both lower banks and minimal amount t of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
Score _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
9 **Condition of Banks**	Banks stable; no evidence of erosion or bank failure.	Moderately stable; infrequent, small areas of erosion mostly healed over.	Moderately unstable; up to 60% of banks in reach have areas of erosion.	Unstable; many eroded areas; "raw" areas frequent Along straight section and bends; on side slopes, 60-100% of bank has erosional scars.
Score _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
10 **Bank Vegetative Protection**	>90% of the stream bank surfaces covered by vegetation.	90-70% of the streambank surfaces covered by vegetation.	70-50% of the stream bank surfaces covered by vegetation.	<50% of the streambank surfaces covered by vegetation.
Score (LB) _____	10 9 8	7 6	5 4 3	2 1 0
Score (RB) _____	10 9 8	7 6	5 4 3	2 1 0
11 **Grazing or other disruptive pressure**	Vegetative disruption, through grazing or mowing, minimal or not evident; almost all plants allowed to grow naturally.	Disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	Disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Disruption of stream bank vegetation is very high; vegetation has been removed to 2 inches or less in average stubble height.
Score (LB) _____	10 9 8	7 6	5 4 3	2 1 0
Score (RB) _____	10 9 8	7 6	5 4 3	2 1 0
12 **Riparian vegetative zone (each bank)**	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clearcuts, lawns, or crops) have not impacted zone.	Width of riparian zone 18-12 meters; human activities have impacted zone only minimally.	Width of riparian zone 12-6 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters;: little or no riparian vegetation due to human activities.
Score (LB) _____	10 9 8	7 6	5 4 3	2 1 0
Score (RB) _____	10 9 8	7 6	5 4 3	2 1 0

Appendix B-2. Glide-pool habitat assessment form used by ADEM.

ADEM-FIELD OPERATIONS-ECOLOGICAL STUDIES
GLIDE/POOL HABITAT ASSESSMENT FIELD DATA SHEET

Name of Waterbody _____ Date: _____
Station Number _____ Investigators _____

Habitat Parameter	Category			
	Optimal	Suboptimal	Marginal	Poor
1 **Instream Cover**	> 50% mix of snags, submerged logs, undercut banks, or other stable habitat; rubble, gravel may be present.	50-30% mix of stable habitat; adequate habitat for maintenance of populations.	30-10% mix of stable habitat; habitat availability less than desirable.	<10% stable habitat; lack of habitat is obvious.
Score _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2 **Pool Substrate Characterization**	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant ; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
Score _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3 **Pool Variability**	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
Score _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4 **Channel Alteration**	No Channelization or dredging present.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization (>20 years) may be present, but not recent.	New embankments present on both banks; channelization may be extensive, usually in urban or agriculture lands; and > 80% of stream reach is channelized and disrupted.	Extensive channelization; banks shored with gabion or cement; heavily urbanized areas; instream habitat greatly altered or removed entirely.
Score _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5 **Sediment Deposition**	<20% of bottom affected; minor accumulation of fine and coarse material at snags and submerged vegetation; little or no enlargement of islands or point bars.	20-50% affected; moderate accumulation; substantial sediment movement only during major storm event; some new increase in bar formation.	50-80% affected; major deposition; pools shallow, heavily silted; embankments may be present on both banks; frequent and substantial sediment movement during storm events.	Channelized; mud, silt, and/or sand in braided or non-braided channels; pools almost absent due to deposition.
Score _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6 **Channel Sinuosity**	Bends in stream increase stream length 3 to 4 times longer than if it was in a straight line.	Bends in stream increase stream length 2 to 3 times longer than if it was in a straight line.	Bends in stream increase the stream length 2 to 1 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7 **Channel flow Status**	Water reaches base of both lower banks and minimal amount t of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
Score _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8 **Condition of Banks**	Banks stable; no evidence of erosion or bank failure; <5% affected.	Moderately stable; infrequent, small areas of erosion mostly healed over; 5-30% affected.	Moderately unstable; 30-60% of banks in reach have areas of erosion.	Unstable; many eroded areas; "raw" areas frequent Along straight section and bends; on side slopes, 60-100% of bank has erosional scars.
Score _____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
9 **Bank Vegetative Protection (each bank)**	> 90% of the stream bank surfaces covered by vegetation.	90-70% of the streambank surfaces covered by vegetation.	70-50% of the stream bank surfaces covered by vegetation.	<50% of the streambank surfaces covered by vegetation.
Score (LB) _____	10 9 8	7 6	5 4 3	2 1 0
Score (RB) _____	10 9 8	7 6	5 4 3	2 1 0
10 **Grazing or other disruptive pressure (each bank)**	Vegetative disruption, through grazing or mowing, minimal or not evident; almost all plants allowed to grow naturally.	Disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	Disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Disruption of stream bank vegetation is very high; vegetation has been removed to 2 inches or less in average stubble height.
Score (LB) _____	10 9 8	7 6	5 4 3	2 1 0
Score (RB) _____	10 9 8	7 6	5 4 3	2 1 0
11 **Riparian vegetative zone Width (each bank)**	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clearcuts, lawns, or crops) have not impacted zone.	Width of riparian zone 18-12 meters; human activities have impacted zone only minimally.	Width of riparian zone 12-6 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.
Score (LB) _____	10 9 8	7 6	5 4 3	2 1 0
Score (RB) _____	10 9 8	7 6	5 4 3	2 1 0

Appendix C-1. Physical characterization form used by ADEM during 1999.

ADEM-FIELD OPERATIONS-ECOLOGICAL STUDIES
PHYSICAL CHARACTERIZATION / WATER QUALITY FIELD DATA SHEET-Wadeable Streams

Station # _____ Date: _____ Collector Names _____

Reach Description: _____

WATERSHED CHARACTERISTICS

Watershed Land Use: Forest Pasture Ag. Residential Commercial Ind. Other: _____

Local Watershed Erosion: None Slight Moderate Heavy

Local Watershed NPS Pollution: No Evidence Potential sources Obvious Sources

REACH CHARACTERISTICS

Land Use at Reach: Pasture Crops Residential Forest Commercial Ind. Other: _____

Est. Stream Width: _____ ft *Depth:* Mid Channel _____ ft Riffle: _____ ft Run: _____ ft Pool: _____ ft

Length of Reach: _____ ft *Stream Gradient:* _____ ft drop in 25 feet (representative seg.) *Channelized:* Y N

Rosgen Stream Type: _____ *Bank Height:* _____ ft *High Water Mark:* _____ ft *Dam Present:* Y N

Prev. 7 day precip: Fl. Flood Heavy Mod. light none *Macrophytes:* None Rare Common Abundant

Canopy Cover: Open 0-20% Mostly Open 20-40% Est. 50/50 40-60% Mostly Shaded 60-80% Shaded 80-100% *Canopy Type:* _____

SEDIMENT / SUBSTRATE CHARACTERISTICS

Odors: Normal Sewage Petroleum Chemical Anaerobic Other: _____

Oils: Absent Slight Moderate Profuse

Deposits: Sludge Sawdust Paper-Fiber Sand Relict Shells Other: _____

Are the undersides of stones not deeply embedded, black? Y N N/A

WATER QUALITY CHARACTERISTICS

Water Odors: Normal Sewage Petroleum Chemical Other: _____

Water Surface Oils: None Slick Sheen Globs Flecks

Water Color: Clear Sl. Tannic Mod. Tannic Dk Tannic Green Gray Other: _____

Weather Conditions: Clear P/C Mostly Cloudy Cloudy Raining

Biological Indicators: Periphyton Macrophytes Fish Filamentous Slimes Others

PHOTOS Roll # _____

Picture # _____ Description _____ Picture # _____ Description _____

EST. % COMP. IN SAMPLING AREA			***FIELD NOTES***	***WATER QUALITY***
Inorganic + Organic = 100%				
Type	Diameter	Percent		Time _____ hrs (24hrs)
Bedrock		%		
Boulder	>10 in.	%		Mid Channel Depth _____ ft
Cobble	2.5 - 10 inches	%		Sample Depth _____ ft
Gravel	0.1 - 2.5 inches	%		
Sand	gritty	%		T-Air _____ C
Silt		%		T-H2O _____ C
Clay	slick	%		pH _____ s.u.
Detritus	Stick, Wood	%		Cond. _____ umhos @ 25c
	CPOM	%		D.O. _____ mg/l
Mud-Muck	fine organic	%		Turb. _____ ntu
Marl	Gray Shell Frag.	%		

Appendix D-1. Results of physical/chemical measurements and water quality samples collected within the Perdido River (0314-01)and Escambia River (0314-03) Accounting Units during the SE Alabama NPS Screening Assessment.

Sub-Watershed Number	Station Number	Date (yymmdd)	Time (24hr)	Water Temp. (°C)	Dissolved Oxygen (mg/L)	pH (s.u.)	Conductivity (umhos @ 25°C)	Turbidity (ntu)	Flow (cfs)	Fecal Coliform (col/100mL)	BOD-5 mg/L	TSS (mg/L)	TDS (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)	NH_3-N (mg/L)	NO_2/ NO_3-N (mg/L)	Total-P (mg/L)	TKN (mg/L)	TON (mg/L)	TOC (mg/L)
Yellow River (0314-0103)																					
050	PRCC-1	990526	0730	21	8.0	7.3	105.4	---	1.5												
050	PRCC-1	990713	0720	23	7.3	5.4	33.0	29.3	20.0	110	0.8	50	46	20	19.8	<0.015	0.17	0.04	0.84	0.84	7.18
Patsaliga River (0314-0302)																					
030	PDCC-1	990602	1345	28	7.6	7.1	94.5	12.0	10.6												
030	PDCC-1	990714	1020	24	7.2	6.9	64.0	15.4	21.0	137	0.7	16	47	35	27.7	<0.015	0.22	0.04	0.56	0.56	3.77
040	CECC-1	990603	1440	29	5.6	6.7	86.5	---	5.3												
040	LPCC-4	990603	1245	29	7.1	6.6	57.8	18.4	2.8												
040	LPCC-4	990714	1105	0	7.3	---	---	27	20.0	199	0.6	24	16	23	19.6	<0.015	0.13	0.04	0.79	0.79	6.4
050	UPCC-1	990526	1456	23	8.0	6.5	28.0	---	5.9												
050	UPCC-1	990714	0855	22	9.0	6.4	24.0	24.4	18.0	270	0.7	33	38	10	9.2	<0.015	0.13	0.03	0.30	0.30	4.34
Lower Conecuh River (0314-0304)																					
010	FYCE-1	990525	1230	24	7.8	4.2	40.4	---	3.3												
010	FYCE-1	990713	1710	24	8.8	3.8	27.0	75.3	11.0	83	1.2	185	26	9	4.41	<0.015	0.09	0.1	0.46	0.46	5.55
010	MHCE-1	990519	1200	21	8.6	5.4	14.0	16.9	15.6												
010	MMCE-1	990518	1435	26	8.0	3.9	36.0	1.7	8.1												
010	MMCE-1	990713	1540	26	7.6	3.7	23.0	24	27.0	22	0.6	57	19	9	2.94	<0.015	0.1	0.03	<0.15	<0.20	4.35
010	MYCE-1	990519	0745	20	6.9	5.1	34.0	6.1	5.7												
010	MYCE-1	990713	1505	24	6.6	3.9	14.0	2.2	22.0	20	1.1	11	24	10	2.97	<0.015	0.07	0.03	0.26	0.26	4.14
010	SHCE-1	990525	0947	22	6.5	5.0	22.2	---	1.8												
010	SSCE-1	990519	1000	21	8.4	4.0	41.0	11.4	42.7												
010	SSCE-1	990713	1620	25	7.7	4.0	15.0	28.7	118.0	37	0.7	53	13	8	3.35	<0.015	0.06	0.05	<0.15	<0.20	4.82
030	JNCC-1	990518	0827	19	7.7	7.3	199.0	8.6	3.3												
030	JNCC-1	990713	0930	23	7.8	6.5	131.0	18.7	13.0	195	1.9	17	91	12	62.3	<0.015	0.16	0.04	0.15	0.15	7.47
030	PRCC-2	990517	1715	21	7.3	5.8	37.0	4.3	2.5												
030	PRCC-2	990714	0850	24	7.4	6.8	47.0	10.6	13.0	120	1.7	10	38	8	13.5	<0.015	0.17	0.03	0.27	0.27	6.98
030	PRCC-3	990518	1112	20	8.4	7.1	113.0	2.4	10.3												
090	NGCE-1	990506	0730	21	7.2	4.9	14.0	2.6	---												
090	NGCE-1	990713	1155	23	6.3	4.2	15.0	0.0	100.0	56	0.3	11	8	9	3.62	<0.015	0.09	0.03	0.45	0.45	6.11
Escambia River (0314-0305																					
020	BECE-2	990517	1100	20	8.3	5.9	26.0	3.6	30.8												
020	EACC-1	990517	1400	21	7.9	5.4	18.0	3.1	12.9												
020	EACC-1	990713	1030	24	6.7	4.2	15.0	5.7	30.0	63	0.8	7	28	57	4.32	<0.015	0.06	0.03	0.80	0.80	10.74
030	SECE-1	990505	0700	19	7.6	5.8	40.0	2.0	28.0												
030	SECE-2	990505	0830	19	8.2	5.9	29.0	6.6	108.6												
030	SECE-2	990713	1110	24	7.3	5.0	23.0	51	100.0	1080	1.1	48	27	6	7.59	<0.015	0.27	0.1	0.93	0.93	6.27
040	CNCE-1	990505	1100	19	8.8	5.4	22.0	4.0	13.9												

** - High Flow

Appendix D-2. Results of water quality samples collected in the Perdido River (0314-01) and Escambia River (0314-03) Accounting Units during the SE Alabama River Basin NPS Screening Assessment.

Sub-Watershed	Station	Date (yymmdd)	Time (24hr)	Al (mg/L)	Ca (mg/L)	Cu (mg/L)	Fe (mg/L)	Mg (mg/L)	Mn (mg/L)	Zn (mg/L)	As (ug/L)	Cl^- (mg/L)	SO_4 (mg/L)
Yellow (0314-0103)													
50	PRCC-1	990713	0720	0.561	6.19	<0.02	0.785	1.05	0.037	<0.03	<10	5.64	2.59
Patsaliga (0314-0302)													
30	PDCC-1	990714	1020	<0.200	9.81	<0.02	2.63	0.77	0.107	<0.03	<10	5.03	1.65
40	LPCC-4	990714	1105	0.266	6.24	<0.02	2.55	0.98	0.083	<0.03	<10	5.27	2.79
50	UPCC-1	990714	855	0.375	2.2	<0.02	1.29	0.90	0.021	<0.03	<10	4.98	3.47
Lower Conecuh (0314-0304)													
10	FYCE-1	990713	1710	2.900	0.92	<0.02	1.58	0.51	0.041	0.031	<10	4.69	6.87
10	MMCE-1	990713	1540	0.873	0.589	<0.02	0.863	0.36	0.036	<0.03	<10	4.57	5.33
10	MYCE-1	990713	1505	<0.200	0.716	<0.02	0.425	0.29	0.043	<0.03	<10	4.74	2.30
10	SSCE-1	990713	1620	0.802	0.695	<0.02	0.708	0.39	0.039	<0.03	<10	4.64	3.83
30	JNCC-1	990713	930	0.483	23.4	<0.02	0.703	0.94	0.043	<0.03	<10	5.15	3.88
30	PRCC-2	990714	850	<0.200	4.17	<0.02	0.762	0.74	0.074	<0.03	<10	5.73	3.24
90	NGCE-1	990713	1155	<0.200	0.662	<0.02	0.97	0.48	0.056	<0.03	<10	5.02	3.00
Escambia (0314-0305)													
20	EACC-1	990713	1030	0.280	1.03	<0.02	1.03	0.43	0.062	<0.03	<10	4.92	2.47
30	SECE-2	990713	1110	1.530	1.61	<0.02	1.44	0.87	0.085	<0.03	<10	5.01	2.47

Appendix E-1. Description of stations located within the Perdido River and Escambia River Accounting Units.

Basin	CU	Sub-watershed	County	Station Number	Purpose	Waterbody Name	Station Description	T / R / S	Latitude	Longitude	Sub-ecoregion
0314	0103	020	Crenshaw	EB06U2-29	ALAMAP 1998	Pigpen Creek	Pigpen Creek approx. 2.8 mi. us of confluence with Lightwood Knot Creek.	6N/18E/28	31.46510	-86.25210	65f
0314	0103	050	Covington	INC-1	1999 303(d)	Indian Creek	Indian Creek @ Covington CR 32.	3N/17E/33	31.18990	-86.35400	65g
0314	0103	050	Covington	INC-2	1999 303(d)	Indian Creek	Indian Creek @ Covington CR 97.	3N/17E/14	31.22600	-86.32210	65g
0314	0103	050	Covington	INC-3	1999 303(d)	Indian Creek	Indian Creek @ unnamed Covington CR north of Onycha.	3N/18E/6	31.25470	-86.28820	65g
0314	0103	050	Covington	INC-4	1999 303(d)	Indian Creek	Indian Creek @ Opp WWTP lagoons.	4N/18E/32	31.26130	-86.28090	65g
0314	0103	050	Covington	PRCC-1	NPS Screening Station	Poplar Creek	Poplar Creek @ CR 45	2N/16E/2	31.16402	-86.42868	65g
0314	0103	060	Covington	CLC-1	Reference Sites	Clear Creek	Clear Creek us of Covington CR 20.	2N/17E/20	31.12150	-86.37580	65g
0314	0103	060	Covington	EB09U2-20	ALAMAP 1998	Tributary to Dry Creek	Tributary to Dry Creek approx. 1.4 mi. us of confluence with Dry Creek.	1N/17E/21	31.04340	-86.35540	65f
0314	0103	080	Covington	BYB-1	1999 303(d)	Bay Branch	Bay Branch @ unnamed CR off Covington CR 36; approx. 1.8 mi. us of confluence with Five Runs Creek.	3N/16E/18	31.22870	-86.48640	65f
0314	0103	080	Covington	BYB-2	1999 303(d)	Bay Branch	Bay Branch @ Covington CR 56; approx. 5.6 mi. us of confluence with Five Runs Creek.	4N/16E/30	31.27810	-86.48420	65f
0314	0103	190	Covington	EB07A3-42	ALAMAP 1999	Tributary to Horsehead Creek	Tributary to Horsehead Creek approx. 1/8 mile south of Covington CR 6 crossing.	6N/22W/22	31.00070	-86.42830	65f
0314	0104	010	Escambia	BRE-1	Reference Sites	Bear Creek	Bear Creek near Escambia CR 51; approx 0.7 miles us of confluence with Blackwater River.	1N/25E/24	31.03760	-86.71260	65f
0314	0106	050	Baldwin	PE01U2-12	ALAMAP 1998	Tributary to Indian Creek	Tributary to Indian Creek approx. 2.4 mi. us of confluence of Indian Creek and Perdido River.	2S/4E/22	30.86140	-87.65490	65f
0314	0106	070	Escambia	BRU-1	1999 303(d)	Brushy Creek	Brushy Creek @ Deere Creek Rd.	1N/5E/35	31.00030	-87.53580	65f
0314	0106	070	Escambia	BRU-2	1999 303(d)	Brushy Creek	Brushy Creek @ US Hwy 31.	1N/5E/26	31.02120	-87.53890	65f
0314	0106	070	Escambia	BRU-3	1999 303(d)	Brushy Creek	Brushy Creek @ Escambia CR 1.	1N/6E/18	31.04430	-87.50590	65f
0314	0106	100	Baldwin	PE02U2-11	ALAMAP 1998	Tributary to Perdido River	Tributary to Perdido River approx. 3.2 mi. us of confluence with Perdido River.	3N/5E/20	30.76770	-87.59350	65f
0314	0106	170	Baldwin	PE2U4-23	ALAMAP 2000	Hollinger Creek	Hollinger Creek	2S/ 4E/ S29	30.84733	-87.68725	65f
0314	0106	190	Baldwin	PE1U4-7	ALAMAP 2000	Caney Bayou	Caney Bayou	7S/ 6E/ S12	30.45051	-87.41491	75a
0314	0106	190	Baldwin	PE01	CWS-1996	Rock Creek	US of Robertsdale STP	6S/4E/4	30.55000	-87.67420	65f
0314	0106	190	Baldwin	PE02	CWS-1996	Rock Creek	Baldwin CR 52	6S/4E/4	30.55408	-87.67530	65f
0314	0106	190	Baldwin	PE03	CWS-1996	Rock Creek	US of mouth	6S/4E/3	30.54839	-87.65780	65f

Appendix E-1. Description of stations located within the Perdido River and Escambia River Accounting Units.

Basin	CU	Sub-watershed	County	Station Number	Purpose	Waterbody Name	Station Description	T / R / S	Latitude	Longitude	Sub-ecoregion
0314	0301	010	Pike	PE10	CWS-1996	Conecuh River	AL Hwy. 223 S of Saco	11N/22E/2	31.94889	-85.82110	65d
0314	0301	010	Pike	CNR07	1999 303(d)	Conecuh River	Conecuh River @ Pike CR 7.	10N/21E/4	31.86840	-85.94660	65d
0314	0301	020	Pike	CNR06	1999 303(d)	Conecuh River	Conecuh River @ Pike CR 1.	10N/20E/23	31.83100	-86.02830	65d
0314	0301	020	Pike	EB01U1	ALAMAP 1997	Mannings Creek	Mannings Creek approx. 9.9 mi. us of confluence with Conecuh River.	12N/21E/28	31.98290	-85.94830	65d
0314	0301	020	Pike	EB02U1	ALAMAP 1997	McQuagee Mill Creek	McQuagee Mill Creek approx. 6.7 mi. us of confluence of Youngblood Creek and Conecuh River.	11N/20E/29	31.89990	-86.07430	65d
0314	0301	020	Pike	EB02U2-9	ALAMAP 1998	Double Branch	Double Branch approx. 1.7 mi. us of confluence with Conecuh River.	10N/20E/35	31.79480	-86.02440	65d
0314	0301	030	Pike	PE11	CWS-1996	Conecuh River	Pike CR 6 SW of Goshen	8N/19E/21	31.71944	-86.10720	65d
0314	0301	030	Pike	CNR04	1999 303(d)	Conecuh River	Conecuh River @ Pike CR 6.	8N/19E/16	31.66030	-86.16040	65d
0314	0301	030	Pike	CNR05	1999 303(d)	Conecuh River	Conecuh River @ Pike CR 28.	9N/19E/25	31.71960	-86.10720	65d
0314	0301	030	Pike	EB2U4-11	ALAMAP 2000	Smilies Mill Creek	Smilies Mill Creek	9N/ 20E/ S32	31.70980	-86.07180	65d
0314	0301	040	Covington	PE06	CWS-1996	Patsaliga Creek	Covington CR 82 west of Gantt	5N/15E/10	31.41444	-86.53500	65f
0314	0301	040	Crenshaw	PE12	CWS-1996	Conecuh River	Crenshaw CR 77 at Dozier	6N/17E/16	31.48722	-86.36110	65d
0314	0301	040	Covington	CNR01	1999 303(d)	Conecuh River	Conecuh River @ Point A Lake dam.	5N/15E/35	31.36210	-86.51640	65f
0314	0301	040	Covington	CNR02	1999 303(d)	Conecuh River	Conecuh River @ Covington CR 86.	5N/16E/4	31.44040	-86.45150	65f
0314	0301	040	Covington	CNR03	1999 303(d)	Conecuh River	Conecuh River @ Covington CR 77.	6N/17E/16	31.48680	-86.36100	65d
0314	0301	050	Covington	PE13	CWS-1996	Conecuh River	Conecuh River @ Covington CR 42 SW of Andalusia	4N/15E/29	31.27722	-86.56830	65p
0314	0301	050	Covington	EB05A3-41	ALAMAP 1999	Tributary to Shady Bend Creek	Tributary to Shady Bend Creek approx. 1/4 mi. northwest of US Hwy 29.	3N/15E/28	31.20110	-86.55920	65f
0314	0302	010	Crenshaw	EB08U3-15	ALAMAP 1999	Patsaliga Creek	Patsaliga Creek approx. 3/4 mi. east of unnamed Crenshaw CR near Petrey.	10N/19E/5	31.86570	-86.18220	65d
0314	0302	030	Crenshaw	PE04	CWS-1996	Patsaliga Creek	Crenshaw CR 59 northeast of Luverne	9N/18E/2	31.78083	-86.22360	65d
0314	0302	030	Crenshaw	EB03U2-21	ALAMAP 1998	Patsaliga Creek	Patsaliga Creek approx. 5.3 mi. us of confluence with Little Patsaliga Creek.	8N/18E/6	31.70040	-86.29700	65d
0314	0302	030	Crenshaw	PDCC-1	NPS Screening Station	Pond Creek	Pond Creek @ unnamed CR E of Vernladge	9N/18E/8	31.77353	-86.26841	65d

Appendix E-1. Description of stations located within the Perdido River and Escambia River Accounting Units.

Basin	CU	Sub-watershed	County	Station Number	Purpose	Waterbody Name	Station Description	T / R / S	Latitude	Longitude	Sub-ecoregion
0314	0302	040	Crenshaw	CECC-1	NPS Screening Station	Cane Creek	Little Patsaliga Creek @ CR 68	11N/17E/28	31.90538	-86.36965	65d
0314	0302	040	Crenshaw	LPCC-4	NPS Screening Station	Little Patsaliga Creek	Cane Creek @ CR11	9N/17E/16	31.75407	-86.35608	65d
0314	0302	050	Crenshaw	PE05	CWS-1996	Patsaliga Creek	AL Hwy 106 southwest of Luverne	7N/17E/12	31.59556	-86.40440	65d
0314	0302	050	Crenshaw	EB03U1	ALAMAP 1997	Patsaliga Creek	Patsaliga Creek approx. 9.4 mi. us of confluence with Buck Creek.	7N/16E/28	31.54760	-86.46270	65d
0314	0302	050	Covington	EB04U1	ALAMAP 1997	Tributary to Patsaliga Creek	Tributary to Patsaliga Creek approx. 0.1 mi. us of confluence with Patsaliga Creek.	6N/15E/26	31.46490	-86.52750	65f
0314	0302	050	Crenshaw	PYW-1	Reference Sites	Pineywoods Creek	Pineywoods Creek @ unnamed Crenshaw CR	7N/16E/9	31.58380	-86.46190	65d
0314	0302	050	Covington	UPCC-1	NPS Screening Station	Tributary to Patsaliga Creek	Unnamed trib of Patsaliga Creek @ CR 23	6N/15E/2	31.52080	-86.52851	65d
0314	0303	010	Conecuh	EB05U2-52	ALAMAP 1998	Tributary to Duck Creek	Tributayr to Duck Creek approx. 0.4 mi. us of confluence with Duck Creek.	7N/12E/6	31.59770	-86.89010	65d
0314	0303	020	Butler	EB01U2-40	ALAMAP 1998	Tributary to Persimmon Creek	Tributary to Persimmon Creek approx. 1.6 mi. us of confluence with Persimmon Creek.	10N/15E/30	31.80570	-86.58510	65d
0314	0303	030	Butler	EB04U2-45	ALAMAP 1998	Tributary to Rocky Creek	Tributary to Rocky Creek approx. 1.7 mi. us of confluence with Rocky Creek.	8N/13E/26	31.64060	-86.73510	65d
0314	0303	030	Butler	EB5U4-30	ALAMAP 2000	Deep Step Creek	Deep Step Creek approx. 0.1 mi. east of Bulter CR 37	9N/ 14E/ S35	31.71268	-86.61988	65d
0314	0303	030	Butler	RYC-1	1999 303(d)	Persimmon Creek	Persimmon Creek @ Butler CR 9.	7N/13E/14	31.57370	-86.73270	65d
0314	0303	030	Butler	RYC-2	1999 303(d)	Rocky Creek	Rocky Creek@ Butler CR 16.	8N/13E/25	31.62620	-86.71210	65d
0314	0303	030	Butler	RYC-3	1999 303(d)	Rocky Creek	Rocky Creek @ US Hwy 31.	8N/13E/24	31.65300	-86.71570	65d
0314	0303	030	Butler	RYC-4	1999 303(d)	Rocky Creek	Rocky Creek @ Butler CR 37.	8N/13E/13	31.66740	-86.71490	65d
0314	0303	040	Conecuh	PE17	CWS-1996	Sepulga River	US Hwy 31 E of Evergreen	6N/13E/29	31.45406	-86.78680	65f
0314	0303	040	Conecuh	EB4U4-19	ALAMAP 2000	Tributary to Sepulga River	Tributary to Sepulga River approx. 0.5 mi. ds of Conecuh CR 47	6N/ 13E/ S35	31.43925	-86.72895	65f
0314	0303	050	Crenshaw	EB06U3-46	ALAMAP 1999	Fayette Branch	Fayette Branch approx. 1/4 mile south of unnamed Crenshaw CR near Rock Hill Church.	10N/16E/27	31.80580	-86.44220	65d
0314	0303	060	Conecuh	EB04U3-23	ALAMAP 1999	Pigeon Creek	Pigeon Creek approx. 1/2 mile ds of US Hwy 84	5N/14E/20	31.38510	-86.67500	65f
0314	0303	060	Butler	EB6U4-43	ALAMAP 2000	Tributary to Hard Labor Creek	Tributary to Hard Labor Creek	8N/ 16E/ S6	31.69183	-86.49549	65d
0314	0303	070	Conecuh	PE18	CWS-1996	Sepulga River	Conecuh CR 42 @ Brooklyn	3N/13E/4	31.26022	-86.76520	65p

Appendix E-1. Description of stations located within the Perdido River and Escambia River Accounting Units.

Basin	CU	Sub-watershed	County	Station Number	Purpose	Waterbody Name	Station Description	T / R / S	Latitude	Longitude	Sub-ecoregion
0314	0304	010	Escambia	PE14	CWS-1996	Conecuh River	Al. Hwy 41 @ Riverview	11N/10E/9	31.06686	-87.06190	65p
0314	0304	010	Escambia	EB01A1	ALAMAP 1997	Crossway Creek	Crossway Creek approx. 4.6 mi. us of confluence with Conecuh River.	2N/12E/7	31.14880	-86.89450	65f
0314	0304	010	Escambia	EB02U3-1	ALAMAP 1999	Tributary to Conecuh River	Tributary to Conecuh River approx. 0.3 mi. us of confluence with Conecuh River	1N/ 11W/ 4	31.07830	-86.95370	65f
0314	0304	010	Escambia	EB03U3-8	ALAMAP 1999	Poley Creek	Poley Creek approx. 1/2 mile ds of Escambia CR 53	2N/13E/7	31.14590	-86.78620	65p
0314	0304	010	Escambia	EB05U1	ALAMAP 1997	Tributary to Conecuh River	Tributary to Conecuh River approx. 0.3 mi. us of confluence with Conecuh River.	1N/11W/4	31.07950	-86.95550	65p
0314	0304	010	Escambia	EB06U1	ALAMAP 1997	Conecuh River	Conecuh River near Pollard.	1N/9E/27	31.01880	-87.14480	65p
0314	0304	010	Escambia	EB08U2-1	ALAMAP 1998	Tributary to Conecuh River	Tributary to Conecuh River approx. 0.1 mi. us of confluence with Conecuh River.	1N11W/4	31.07970	-86.95600	65p
0314	0304	010	Escambia	EB1U4-1	ALAMAP 2000	Tributary to Conecuh River	Tributary to Conecuh River	1N/ 11W/ S4	31.07802	-86.95597	65p
0314	0304	010	Escambia	EB3U4-15	ALAMAP 2000	Tributary to Maye Creek	Tributary to Maye Creek	2N/ 11E/ S9	31.14568	-86.95721	65f
0314	0304	010	Escambia	FYCE-1	NPS Screening Station	Folley Creek	Folley Creek @ CR 53	2N/13E/19	31.12779	-86.79647	65f
0314	0304	010	Escambia	MHCE-1	NPS Screening Station	Maye Mill Creek	Menden Hall Creek @ CR 53	2N/12E/23	31.11680	-86.82455	65f
0314	0304	010	Escambia	MMCE-1	NPS Screening Station	Silas Creek	Maye Mill Creek @ unnamed CR	1N/11E/9	31.06273	-86.96919	65f
0314	0304	010	Escambia	MYCE-1	NPS Screening Station	Maye Creek	Maye Creek @ US Hwy 29	2N/11E/27	31.10124	-86.94736	65p
0314	0304	010	Escambia	SHCE-1	NPS Screening Station	Mendan Hall Creek	Smith Creek @ US Hwy 29	2N/12E/1	31.16270	-86.81155	65f
0314	0304	010	Escambia	SSCE-1	NPS Screening Station	Smith Creek	Silas Creek @ CR 4	1N/12E/6	31.07934	-86.88759	65f
0314	0304	020	Conecuh	EB7U4-47	ALAMAP 2000	Tributary to Murder Creek	Unnamed tributary to Murder Creek approx. 2 mi. us of AL Hwy 83	6N/ 10E/ S12	31.50756	-87.00598	65f
0314	0304	030	Conecuh	EB01U3-28	ALAMAP 1999	Tributary to Murder Creek	Tributary to Murder Creek approx. 2 mi. us of confluence with Murder Creek.	5N/ 11E/ 28	31.37070	-86.97060	65f
0314	0304	030	Conecuh	JNCC-1	NPS Screening Station	Jordan Creek	Jordan Creek @ St. Hwy 31	5N/10E/35	31.34914	-87.02753	65f
0314	0304	030	Conecuh	PRCC-2	NPS Screening Station	Panther Creek	Panther Creek @ CR 17	4N/10E/6	31.34182	-87.09413	65f
0314	0304	030	Conecuh	PRCC-3	NPS Screening Station	Panther Creek	Panther Creek @ St. Hwy 31	4N/10E/23	31.30122	-87.02269	65f
0314	0304	050	Escambia	BCRE-1	1999 303(d)	Burnt Corn Creek	Burnt Corn Creek @ US Hwy 31	2N/10E/29	31.10090	-87.07630	65f

Appendix E-1. Description of stations located within the Perdido River and Escambia River Accounting Units.

Basin	CU	Sub-watershed	County	Station Number	Purpose	Waterbody Name	Station Description	T / R / S	Latitude	Longitude	Sub-ecoregion
0314	0304	050	Escambia	BCRE-2	1999 303(d)	Burnt Corn Creek	Burnt Corn Creek @ AL Hwy 41.	2N/10E/17	31.12970	-87.08730	65f
0314	0304	050	Escambia	BCRE-3	1999 303(d)	Burnt Corn Creek	Burnt Corn Creek @ Escambia CR 77.	2N/10E/6	31.16900	-87.09830	65f
0314	0304	090	Escambia	EB07U2-15	ALAMAP 1998	Tributary to Little Escambia Creek	Tributary to Little Escambia Creek approx. 0.3 mi. us of confluence with Little Escambia Creek.	3N/8E/13	31.22650	-87.20950	65f
0314	0304	090	Escambia	LEC-1	1999 303(d)	Little Escambia Creek	Little Escambia Creek @ US Hwy 31.	1N/9E/30	31.02060	-87.20720	65f
0314	0304	090	Escambia	LEC-2	1999 303(d)	Little Escambia Creek	Little Escambia Creek @ Escambia CR 35.	1N/8E/13	31.05560	-87.21620	65f
0314	0304	090	Escambia	NGCE-1	NPS Screening Station	Narrow Gap Creek	Narrow Gap Creek @ unnamed CR off AL Hwy 113	3N/8E/33	31.17757	-87.27452	65f
0314	0305	020	Escambia	PE07	CWS-1996	Big Escambia Creek	Unnamed Escambia CR NW of Barnett Crossroads	3N/7E/11	31.23500	-87.33694	65f
0314	0305	020	Escambia	PE08	CWS-1996	Big Escambia Creek	Escambia CR 27 at Sardine	2N/7E/16	31.13008	-87.37030	65f
0314	0305	020	Escambia	BEC-2	1999 303(d)	Big Escambia Creek	Big Escambia Creek @ Escambia CR 27.	2N/7E/16	31.12970	-87.37030	65f
0314	0305	020	Escambia	BECE-2	NPS Screening Station	Big Escambia Creek	Big Escambia Creek @ CR 40	3N/7E/11	31.23504	-87.33741	65f
0314	0305	020	Conecuh	EACC-1	NPS Screening Station	Escambia Creek	Escambia Creek @ unnamed CR W of Range	4N/7E/14	31.30450	-87.33439	65f
0314	0305	030	Escambia	PE15	CWS-1996	Sizemore Creek	AL Hwy 21 N of Atmore	1N/6E/5	31.08019	-87.48160	65f
0314	0305	030	Escambia	PE16	CWS-1996	Sizemore Creek	Escambia CR 27 NE of Atmore	2N/7E/32	31.09911	-87.39130	65f
0314	0305	030	Escambia	SECE-1	NPS Screening Station	Sizemore Creek	Sizemore Creek @ unnamed CR SE of Martinville	2N/6E/35	31.08913	-87.43064	65f
0314	0305	030	Escambia	SECE-2	NPS Screening Station	Sizemore Creek	Sizemore Creek @ CR 27	2N/7E/29	31.09928	-87.39181	65f
0314	0305	040	Escambia	PE09	CWS-1996	Big Escambia Creek	US Hwy. 31 in Flomaton	1N/8E/33	31.01219	-87.26270	65f
0314	0305	040	Escambia	BEC-1	1999 303(d)	Big Escambia Creek	Big Escambia Creek @ US Hwy 31.	1N/8E/S33	31.01060	-87.26290	65f
0314	0305	040	Escambia	CNCE-1	NPS Screening Station	Cowpen Creek	Cowpen Creek @ CR 12	1N/7E/11	31.05895	-87.34317	65f
0314	0305	090	Escambia	EB10A2-27	ALAMAP 1998	Tributary to Hobbs Branch	Tributary to Hobbs Branch approx. 0.1 mi. us of confluence with Hobbs Branch.	1N/7E/29	31.02560	-87.38740	65f

Appendix F-1. Ecoregional Reference Site Program

Lead agency: ADEM

Purpose: Ecoregions are relatively homogeneous ecological areas defined by similarity of climate, landform, soil, potential natural vegetation, hydrology, or other ecologically relevant variables. Since 1991, ADEM has maintained a network of least-impaired ecoregional reference sites. Intensive monitoring assessments, including chemical, physical, habitat, and biological data, are collected to develop baseline reference conditions for each of Alabama's 29 Level IV sub-ecoregions (Griffith et al. 2001). The reference condition establishes the basis for making comparisons and detecting use impairment.

Tables 6a and 6b. Habitat assessment data

Tables 7a and 7b. Bioassessment data

Appendix F-1a. Chemical/physical data

Appendix F-1b. Water column metals data

References: ADEM. 2000a. Ecoregional reference site data collected by ADEM 1992 to 2000 (unpublished). Field Operations Division. Alabama Department of Environmental Management. Montgomery, AL.

Appendix F-1a. Physical/chemical data collected during 1999 at Ecoregional Reference Sites located within the Perdido River (0314-01) and Escambia River (0314-03) Accounting Units.

Sub-Watershed	Station	Date	Time	Air Temp.	Water Temp.	Dissolved Oxygen	pH	Conductivity	Turbidity	Stream Flow	Fecal Coliform	BOD-5	TSS	TDS	TOC	Total-P	NO_3+ NO_2-N	NH_3-N	TKN	Hardness	Alkalinity	TON
	#	*yymmdd*	*24hr*	*°C*	*°C*	*mg/L*	*s.u.*	*umhos @25°C*	*NTU*	*cfs*	*col/100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
Yellow River (0314-0103)																						
060	CLC -1	990525	1615	28	24	7.1	6.9	110		16.9												
060	CLC -1	990629	1540	28	25	7.0	5.8	30	5.6		90	0.6	1		17.66	0.008	0.03	<0.015	0.79			
060	CLC-1	990714	1030		24	6	5.6	15	11.9	HF	590	0.8	17	37	18.56	0.03	0.06	<MDL	0.8	7.73	10	0.8
060	CLC -1	990719	1325	30	28	8.5	4.9	20	3.66	NW	est 7	1.4	4		14.1	0.03	0.05	<0.015	0.23			
060	CLC -1	990816	1505	38	24	6.4	6.3	40	61.2	NW	60	1.9	118		26.7	0.05	0.05	<0.015	0.37			
060	CLC -1	990914	1115							NF												
Blackwater River (0314-0104)																						
010	BRE -1	990519	1100	22	21	7.2	4.3	20	5.6	72	>400		<5	85		0.007	0.083	<0.01	0.44			
010	BRE -1	990525	1510	33	23	7.3	4.5	24.3		21.3												
010	BRE -1	990614	1130	27	23	7.3	4.8	20	4.0	36.6	18		<5	29		0.008	0.016	<0.01	0.32			
010	BRE -1	990624	1055	25	22	7.3	4.8	20	2.5	21	110		<5	36		0.007	0.254	<0.01	0.38			
010	BRE -1	990915	1100	27	21	7.7	4.9	20	1.3	13.4	42		<5	37		0.007	0.81	<0.01	0.17			
Patsaliga River (0314-0302)																						
050	PYW -1	990628	1050	26	25	5.4	5.8	20	45		480	1.6	70		21.6	0.040	0.06	<0.015	1.1			
050	PYW -1	990720	1145	38	25	8.2	6.3	40	4.0	NW	360	1.6	20		9.4	0.040	0.10	<0.015	0.4			
050	PYW -1	990816	1040	36	24	5.1	6.9	80	13.2	0.4	520	1.0	8		6.4	<0.004	0.05	<0.015	0.61			
050	PYW -1	990913	1230							NF												

NF: no flow
HF: high flow
NW: not wadeable

Appendix F-1b. Results of metals, chloride, and sulfate analyses from ADEM's Ecoregional Reference Site stations located within the Perdido River (0314-01) and Escambia River (0314-03) Accounting Units.

Sub-Watershed	Station	Date (yymmdd)	Time (24hr)	Al (mg/L)	Ca (mg/L)	Cu (mg/L)	Fe (mg/L)	Mg (mg/L)	Mn (mg/L)	Zn (mg/L)	As (mg/L)	Cl (mg/L)	SO_4 (mg/L)
Yellow (0314-0103)													
060	CLC-1	990714	1030	0.654	2.5	<0.02	0.674	0.362	0.045	<0.03	<10	4.41	1.99

Appendix F-2. CWA §303(d) Waterbody Monitoring Project

***Lead agency*:** ADEM

***Purpose*:** In accordance with Section 303(d) of the Federal Clean Water Act, each state must identify its polluted water bodies that do not meet surface water quality standards and submit this list to the USEPA. In an effort to address water quality problems within Alabama, some water bodies were included on ADEM's §303(d) list that were suspected of having water quality problems based on evaluated assessment data. ADEM conducts monitored assessments of priority water bodies to support §303(d) listing and de-listing decisions. This project includes intensive chemical, habitat, and biological data collected using ADEM's SOPs and QA/QC manuals.

Tables 6a and 6b. Habitat assessment data

Tables 7a and 7b. Bioassessment data

Appendix F-2. Physical/ chemical data

References: ADEM. 2000c. Water quality monitoring data collected by ADEM in support of CWA §303(d) listing and de-listing decisions 1999-2000 (unpublished). Field Operations Division. Alabama Department of Environmental Management. Montgomery, AL.

Appendix F-2. Physical/chemical data collected from stations located within the Perdido River (0314-01) and Escambia River (0314-03) Accounting Units in conjunction with ADEM's 1999 CWA §303(d) Monitoring Program (ADEM 1999c). (BC=bridge closed; NF=no flow; est=estimate)

Sub-Watershed	Station	Date	Time	Air Temp.	Water Temp.	Dissolved Oxygen	pH	Conductivity	Turbidity	Stream Flow	Fecal Coliform	BOD-5	TSS	TDS	TOC	Total-P	NO_3+ NO_2-N	NH_3-N	TKN	Hardness
		yymmdd	*24hr*	*^oC*	*^oC*	*mg/L*	*s.u.*	*umhos @25^oC*	*NTU*	*cfs*	*col/100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
Yellow River (0314-0103)																				
050	INC -1	990628	1610	30	25.5	6.8	6.6	60	BC			1.7	20		8.76	0.06	0.12	<0.015	0.15	
050	INC -1	990719	1455	30	26.6	7.6	6.5	70	7.9	2.9	170	1.3	10		6.86	0.05	0.17	<0.015	0.15	
050	INC -1	990816	1330	44	31.9	7.5	6.9	90	6.9	0.7	380	0.9	3		5.25	<0.004	0.15	<0.015	0.31	
050	INC -1	990914	0915	38	23.9	7.9	7.0	90	6.4	0.4	93									
050	INC -2	990628	1500	30	26.1	6.1	6.3	60	20.8		120	1.1	12		8.07	0.07	0.13	0.02	0.56	
050	INC -2	990720	0855							NF										
050	INC -2	990816	1320							NF										
050	INC -2	990914	0850							NF		2.4	4		4.64	0.08	0.12	<0.015	<0.15	
050	INC -3	990628	1410	30	28.4	3.3	6.1	80	22.3		est 63	2	9		7.96	0.09	0.05	<0.015	0.46	
050	INC -3	990720	0920							NF										
050	INC -3	990816	1310							NF										
050	INC -3	990914	1140							NF										
080	BYB -1	990629	0930	32	25.7	6.2	6.2	70	18.1		70	0.9	11		6.55	0.03	0.26	<0.015	0.15	
080	BYB -1	990719	1215	35	26.5	6.2	6.4	60	38.8		310	1.8	13		7.85	0.05	0.32	<0.015	0.29	
080	BYB -1	990817	0905							NF										
080	BYB -1	990913	1450							NF										
080	BYB -2	990629	1050	34	28.5	8.4	6.6	110	15.6		530	0.9	12		5.73	0.04	0.35	0.07	0.43	
080	BYB -2	990719	1145	33	25.8	6.4	6.2	105	26.5		1167	2.9	16		8.25	0.07	0.45	<0.015	0.59	
080	BYB -2	990817	0915							NF										
Perdido River (0314-0106)																				
070	BRU -1	990512	1000	26	19.0	6.2	5.0	41	2.5		52		<5	32		0.009	0.293	0.02	0.31	
070	BRU -1	990601	1110	27	22	6.3	5.6	40	5.1		87		<5	33		0.02	0.189	0.039	0.81	
070	BRU -1	990622	1055	30	22	6.2	5.7	30	4.0		54		<5	37		0.014	0.23	<0.01	0.39	
070	BRU -1	990902	1200	32	23	6.5	5.8	40	2.7		390		<5	44		0.007	0.47	<0.01	0.17	
070	BRU -2	990504	1530	26	19	7.23	5.6	42	4.3	7.5										
070	BRU -2	990513	1115	25	20	7.6	5.2	40	6.3	9.8	4		7	35		0.025	0.371	0.04	0.38	
070	BRU -2	990601	1130	32	22	6.2	5.6	40	7.0	10.5	190		8	33		0.024	0.273	0.291	0.4	
070	BRU -2	990622	0950	30	22	6.2	5.6	40	4.8	7.9	2		5	37		0.026	0.337	<0.01	0.41	
070	BRU -2	990902	1045	27	22	6.1	5.5	50	5.6	9.3	30		6	40		0.024	0.54	0.01	0.22	
070	BRU -3	990512	1040	25	20	2.6	5.5	79	15.9		220		5	47		0.089	<0.005	0.04	0.73	
070	BRU -3	990601	1040	27	23	0.8	5.9	70	14.5		215		8	50		0.083	0.006	0.051	0.94	
070	BRU -3	990622	1115	30	25	0.6	6.2	60	18.2		232		9	59		0.096	<0.005	0.01	1.1	
070	BRU -3	990902	1250	28	25	0.6	6.1	100	20.0		>400		10	72		0.244	0.01	0.09	0.89	

Appendix F-2. Physical/chemical data collected from stations located within the Perdido River (0314-01) and Escambia River (0314-03) Accounting Units in conjunction with ADEM's 1999 CWA §303(d) Monitoring Program (ADEM 1999c). (NW=non-wadeable; BC=bridge closed; NF=no flow; est=estimate)

Sub-Watershed	Station	Date	Time	Air Temp.	Water Temp.	Dissolved Oxygen	pH	Conductivity	Turbidity	Stream Flow	Fecal Coliform	BOD-5	TSS	TDS	TOC	Total-P	NO_3+ NO_2-N	NH_3-N	TKN	Hardness
		yymmdd	*24hr*	*^oC*	*^oC*	*mg/L*	*s.u.*	*umhos @25^oC*	*NTU*	*cfs*	*col/100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
Upper Conecuh River (0314-0301)																				
030	CNR-4	990615	1045	31	27	6.4	7.3	90	---	NW	29	0.1	10	---	4.08	0.02	0.26	<0.015	<0.15	---
030	CNR-4	990706	1100	33	26	4.9	7.0	75	14.8	---	51	1	16	---	11.23	0.05	0.2	<0.015	1.11	---
030	CNR-4	990824	1330	32	27	6.2	7.3	110	11.2	---	67	1.7	11	---	2.6	<0.004	0.42	<0.015	<0.15	---
030	CNR-4	990930	1015	19	21	6.9	7.1	110	7.17	---	25	0.6	6	---	3	0.04	0.35	<0.015	<0.15	---
030	CNR-5	990615	0955	37	28	6.5	7.3	80	13.7	---	113	0.4	7	---	5.18	0.03	0.24	<0.015	<0.15	---
030	CNR-5	990706	1035	35	28	2.6	6.8	145	8.5	---	80	1.2	8	---	7.98	0.02	0.45	<0.015	0.78	---
030	CNR-5	990824	1305	34	28	8	7.3	360	1.6	---	42	1.2	7	---	2.6	<0.004	0.45	<0.015	0.26	---
030	CNR-5	990930	0950	20	23	7.5	7.0	80	7.17	---	59	1.9	3	---	4.43	0.04	0.27	<0.015	<0.15	---
030	CNR-6	990615	0920	35	27	6.4	7.0	70	---	---	100	0.7	11	---	9.01	0.07	0.13	<0.015	<0.15	---
030	CNR-6	990706	0900	31	26	5.3	6.9	65	12.2	---	73	1	19	---	9.98	0.04	0.18	<0.015	<0.15	---
030	CNR-6	990824	1230	30	27	5.8	6.8	70	14.5	---	220	1.1	8	---	6.31	0.01	0.18	<0.015	<0.15	---
030	CNR-6	990930	1050	22	21	7.1	7.2	60	7.3	---	128	1.5	7	---	4.86	0.04	0.15	<0.015	<0.15	---
030	CNR-7	990615	1330	26	26	5.8	7.3	70	---	48.5	83	0.8	15	---	11.13	0.08	0.12	<0.015	0.49	---
030	CNR-7	990706	0940	36	27	4.6	6.9	75	14.8	---	70	1.2	9	---	15.79	0.06	0.04	<0.015	<0.15	---
030	CNR-7	990824	1430	28	27	5.2	7.0	70	20.2	3.1	25	0.8	9	---	6.79	0.02	0.09	<0.015	<0.15	---
030	CNR-7	990930	0915	---	---	---	---	---	---	NF	---	---	---	---	---	---	---	---	---	---
040	CNR -1	990428	1116		23.6	7.38	7.23	73.8	12.4		est 8	1	10	---	5.23	0.02	<0.003	<0.015	0.27	28.1
040	CNR -1	990525	1155		26.0	6.78	7.11	55	15.5		est 1	1.4	8	---	6.29	0.02	0.11	<0.015	0.77	23
040	CNR -1	990622	1224		27.2	6.68	7.28	66.7	13.6		est 5	0.7	5	---	6.14	0.02	0.11	<0.015	<0.15	23.9
040	CNR -1	990727	1121		30.4	7.56	6.88	54.3	24.0		est 14	1.3	11	---	7.79	0.03	0.12	<0.015	<0.15	20.1
040	CNR -1	990824	1134		30.1	6.04	7.1	63	7.03		est 2	1.1	3	---	7.68	0.02	0.04	<0.015	0.28	25.7
040	CNR -1	990928	1103		25.6	8.45	7.57	71	3.03		est 3	1.7	6	---	4.8	0.06	0.12	<0.015	0.53	30.1
040	CNR -1	991026	1032		19.0	7.84	7.62	83.2	4.15		est 1	0.9	7	---	4.61	0.01	0.125	<0.015	0.61	19
040	CNR -2	990428	1408		24.1	6.92	7.12	61.3	20.8		est 2	1	10	---	7.63	0.13	<0.003	<0.015	<0.15	23.1
040	CNR -2	990525	1454		26.5	7.03	6.98	52.1	15.5		<1	1.1	10	---	7.19	0.02	0.09	<0.015	0.15	22
040	CNR -2	990622	1602		28	6.6	7.43	74.1	13.7		est 2	2.2	1	---	5.69	0.02	0.12	<0.015	7.05	27.2
040	CNR -2	990629	1210	34	28.6	6.2	6.9	50	30.0		77	1.5	17	---	7.74	0.04	0.14	<0.015	0.46	---
040	CNR -2	990727	1417		28.2	5.24	6.8	55.6	22.4		est 15	0.9	12	---	8.2	0.03	0.12	<0.015	<0.15	20.5
040	CNR -2	990824	1359		31.1	7.39	7.77	68.9	6.17		est 3	1.1	5	---	8.18	0.004	<0.003	<0.015	0.2	27.5
040	CNR -2	990928	1355		25.5	8.97	7.91	78.1	2.7		<1	1.7	2	---	4.47	0.11	0.08	<0.015	0.28	36.4
040	CNR -2	991026	1309		19.1	7.87	7.59	88	3.87		<1	0.8	4	---	4.22	0.03	0.143	<0.015	<0.15	25.3
040	CNR -3	990628	1155	34	25.6	5.3	5.78	25	67.5		833	0.3	98	---	21.44	0.07	0.1	0.03	0.76	
040	CNR -3	990720	1100	32	26.8	8.2	6.3	60	39.3		467	1.5	18	---	8.19	0.06	0.19	<0.015	0.32	
040	CNR -3	990816	1220							BC				---						
040	CNR -3	990913	1350		27.9	8.5	6.39	120	11.8		39	2.3	14	---	4.7	0.08	0.27	0.2	0.47	

Appendix F-2. Physical/chemical data collected from stations located within the Perdido River (0314-01) and Escambia River (0314-03) Accounting Units in conjunction with ADEM's 1999 CWA §303(d) Monitoring Program (ADEM 1999c). (BC=bridge closed; NF=no flow; est=estimate)

Sub-Watershed	Station	Date	Time	Air Temp.	Water Temp.	Dissolved Oxygen	pH	Conductivity	Turbidity	Stream Flow	Fecal Coliform	BOD-5	TSS	TDS	TOC	Total-P	NO_3+ NO_2-N	NH_3-N	TKN	Hardness
		yymmdd	*24hr*	*^oC*	*^oC*	*mg/L*	*s.u.*	*umhos @25^oC*	*NTU*	*cfs*	*col/100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
Sepulga River (0314-0303)																				
030	RYC -2	990419	0940	18	15	6.0	6.2	59.1	16.2	20.2	55	1.9	18		16.25	0.1	0.02	<0.015	0.84	
030	RYC -2	990603	0915	30.5	26.0	4.0	6.46	101	20.1	0										
030	RYC -2	990719	1045							NF										
030	RYC -2	990816	1010							NF										
030	RYC -2	990913	1150							NF										
030	RYC -3	990419	1030	24	16	5.9	6.4	66	16.3		37	2	8		16.36	0.1	0.05	<0.015	0.79	
030	RYC -3	990603	0850							NF										
030	RYC -3	990629	1410	34	28.1	6.1	6.27	50	31.6		430	1.7	36		17.45	0.04	0.11	<0.015	0.95	
030	RYC -3	990719	1020	30	27.4	7.1	5.86	40	68.3		>5567	3.2	74		21.2	0.07	0.12	<0.015	0.79	
030	RYC -3	990816	1005							NF										
030	RYC -3	990913	1120							NF										
030	RYC -4	990419	1115	24	16.2	5.6	6.45	84	15.3	NF	42	1.4	8		11.49	0.11	0.02	<0.015	0.7	
030	RYC -4	990629	1400	34	26.1	5.6	6.21	60	31.9		310	1.6	32		19.39	0.04	0.12	<0.015	0.95	
030	RYC -4	990719	1000	30	28.0	6.0	5.95	35	60.6		>5467	3.1	57		35	0.05	0.11	<0.015	0.53	
030	RYC -4	990816	1000							NF										
030	RYC -4	990913	1125							NF										
Lower Conecuh River (0314-0304)																				
050	BCRE-1	990518	1110	28	23	8.2	7.0	60	6.1		30		<5	56		0.005	0.087	<0.01	0.4	
050	BCRE-1	990610	1020	25	25	7.7	7.3	80	7.0		70		<5	76			0.099	<0.01	0.44	
050	BCRE-1	990623	1150	26	25	7.7	6.9	50	9.0		98		<5	60		0.015	0.075	<0.01	0.46	
050	BCRE-1	990907	1145	29	26	7.2	6.7	40	13.1		>400		8	111		0.015	0.1	<0.01	0.34	
050	BCRE-2	990505	1610	29	21	8.7	6.8	71	3.8	NF										
050	BCRE-2	990518	1130	29	23	8.2	7.0	70	5.5		34		<5	52		0.008	0.095	<0.01	0.6	
050	BCRE-2	990610	1105		25	7.6	7.3	80	6.0		40		<5	71		0.013	0.107	<0.01	0.27	
050	BCRE-2	990623	1215	29	24	7.7	6.7	50	9.5		280		<5	64		0.017	0.1	<0.01	0.68	
050	BCRE-2	990909	1255	27	25	7.6	6.9	56	13.3		450		13	55		0.018	0.14	<0.01	0.39	
050	BCRE-3	990518	1240	28	23	8.5	7.2	70	6.3		30		<5	57		0.008	0.12	<0.01	0.54	
050	BCRE-3	990610	1130		25	8.0	7.5	90	6.4		45		<5	63		0.017	0.116	<0.01	0.26	
050	BCRE-3	990623	1230	30	24	7.7	7.1	60	6.5		44		<5	66		0.014	0.103	<0.01	0.54	
050	BCRE-3	990907	1230	33	26	5.8	6.8	46	7.6		240		6	125		0.013	0.1	<0.01	0.38	
090	LEC -1	990505	1250	28	19	8.7	5.5	29	3.3	68.8										
090	LEC -1	990518	1015	29	21	7.7	5.6	40	3.8	59.6	38		5	34		<0.005	0.297	<0.01	0.36	
090	LEC -1	990603	1010	29	22	8.0	5.2	30	4.4	78.6	82		<5	41		<0.005	0.181	<0.01	0.25	
090	LEC -1	990623	1050	27	23	7.9	5.5	30	5.3	84.8	140		<5	44		0.008	0.232	<0.01	0.38	
090	LEC -1	990909	1030	26	24	7.3	4.7	39	14.4	245.0	290		12	54		0.013	0.15	<0.01	0.25	
090	LEC -2	990512	1300	30	21	8.2	4.6	29	4.1		44		<5	---		<0.005	0.273	0.01	0.39	
090	LEC -2	990603	1130	31	23	8.0	5.2	30	4.3		46		<5	37		<0.005	0.17	<0.01	0.27	

Appendix F-2. Physical/chemical data collected from stations located within the Perdido River (0314-01) and Escambia River (0314-03) Accounting Units in conjunction with ADEM's 1999 CWA §303(d) Monitoring Program (ADEM 1999c). (BC=bridge closed; NF=no flow; est=estimate)

Sub-Watershed	Station	Date	Time	Air Temp.	Water Temp.	Dissolved Oxygen	pH	Conductivity	Turbidity	Stream Flow	Fecal Coliform	BOD-5	TSS	TDS	TOC	Total-P	NO_3+ NO_2-N	NH_3-N	TKN	Hardness
		yymmdd	*24hr*	*^oC*	*^oC*	*mg/L*	*s.u.*	*umhos @25^oC*	*NTU*	*cfs*	*col/100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
Lower Conecuh River (0314-0304)																				
090	LEC -2	990622	1300	33	24	7.9	5.5	20	5.0		76		<5	40		0.008	0.216	<0.01	0.39	
090	LEC -2	990909	1130	28	24	7.1	4.7	36	11.2		230		10	51		0.011	0.13	<0.01	0.24	
Escambia River (0314-0305)																				
020	BEC -2	990504	1700	20	21	8.34	5.69	22	2.82	124.6										
020	BEC -2	990512	1143	28	21	8.2	5.0	26	3.2		12		<5	21		0.009	0.203	0.01	0.34	
020	BEC -2	990601	1250	30	24	8.0	5.6	30	7.3		10		<5	26		0.006	0.114	<0.01	0.64	
020	BEC -2	990622	1150	30	23	7.9	5.8	20	5.7		82		<5	36		0.014	0.165	0.19	0.44	
020	BEC -2	990907	1000	26	24	7.4	5.3	26	15.3		>400		13	83		0.016	0.21	<0.01	0.39	
040	BEC -1	990513	1345	29	22	9.4	5.6	30	9.6		265		7	31		0.022	0.4	0.03	0.43	
040	BEC -1	990603	0945	28	23	7.5	5.5	30	5.5		1400		<5	34		<0.005	0.265	<0.01	0.28	
040	BEC -1	990622	1240	30	25	7.9	6.2	20	7.1		50		<5	34		0.026	0.322	<0.01	0.39	
040	BEC -1	990907	1100	29	24	6.4	5.8	29	39.0		>400		25	90			0.23	<0.01	0.49	

Appendix F-3. ALAMAP (Alabama Monitoring and Assessment Program)

***Lead agencies*:** ADEM and USEPA

***Purpose*:** Statewide monitoring effort under development to provide data that can be used to estimate the current status of all streams within Alabama. Evaluated assessment data, including chemical, physical, and habitat parameters are collected once at 250 stations, randomly selected by USEPA-Gulf Breeze over a 5-year period using *ADEM's SOPs and QA/QC manuals* (ADEM 1997a).

Appendix F-3a. Physical/ chemical data

Appendix F-3b. Habitat assessment data

References: ADEM. 2000b. Alabama Monitoring and Assessment Program (ALAMAP) data collected by ADEM 1997 to 2000 (unpublished). Field Operations Division. Alabama Department of Environmental Management. Montgomery, AL.

Appendix F-3a. Physical/chemical data collected during the Alabama Monitoring and Assessment Program (ALAMAP) from locations within the Perdido River (0314-01) and Escambia River (0314-03) Accounting Units.

Sub-Watershed	Stream Name	Station	Date	Time	Air Temp.	Water Temp.	Dissolved Oxygen	pH	Conductivity	Turbidity	Stream Flow	Depth	Fecal Coliform	BOD-5	TDS	TSS	NO_2/ NO_3-N	Total-P	Cl^-
			yymmdd	*24hr*	*^oC*	*^oC*	*mg/L*	*s.u.*	*umhos @25^oC*	*NTU*	*cfs*	*m*	*col/100mL*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
Yellow (0314-0103)																			
020	Pigpen Creek	EB06U2-29	980806	0936	27	22	5.4	5.3	24	8.9	<0.1	0.10	27 est.	1.4	52	8	0.46	0.01	4.8
060	Dry Creek, UT to	EB09U2-20	980805	1337	35	24	2.5	4.3	36	7.3	0.0	0.00	11 est.	4.0	71	7	0.01	0.03	5.6
190	Horsehead Creek, UT to	EB07A3-42	990811	0950	26	27	4.4	5.8	49	5.6	0.3	---	200	0.4	52	3	0.04	<0.004	7.5
Perdido (0314-0106)																			
050	Indian Creek, UT to	PE01U2-12	980811	1300	28	26	3.7	4.5	22	3.5	0.1	---	53	1.9	43	11	<0.005	<0.005	4.0
100	Perdido River, UT to	PE02U2-11	980812	1015	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
190	Caney Bayou	PE1U4-7	001010	1235	18	18	6.9	7.6	14260	2.4	---	3.20	88	---	7880	15	---	---	---
Upper Conecuh (0314-0301)																			
020	Mannings Creek	EB01U1	970806	1147	33	24	7.7	6.3	47	35.8	0.5 est.	0.20	167	0.7	72	12	0.16	0.15	4.4
020	McQuagee Mill Creek	EB02U1	970806	1337	33	27	6.6	5.0	24	10.0	5.1 est.	0.20	41	0.5	43	8	0.06	0.15	4.1
020	Double Branch	EB02U2-9	980804	1159	25	22	7.7	7.4	98	19.9	1.4 est.	0.00	43 est.	0.9	100	11	0.91	0.02	6.2
030	Smilies Mill Creek	EB2U4-11	000808	0900	25	25	7.3	7.2	225	6.0	0.7	0.15	>1080	2.3	130	1	0.98	0.01	5.7
050	Shady Bend Creek, UT to	EB05A3-41	990811	1115	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Patsaliga (0314-0302)																			
010	Patsaliga Creek	EB08U3-15	990804	1430	35	29	6.3	7.0	68	12.5	1.1		70	1.8	64	5	0.15	0.04	5.5
030	Patsaliga Creek	EB03U2-21	980806	1103	30	26	6.2	6.9	108	13.3	31.1 est.	0.60	57	0.8	97	12	0.26	0.03	5.4
050	Patsaliga Creek	EB03U1	970807	1242	29	27	6.8	6.9	86	12.9	70 est.	0.70	47	0.1	81	2	0.24	0.12	5.2
050	Patsaliga Creek, UT to	EB04U1	970807	1633	30	25	7.6	6.1	40	5.1	1.0 est.	0.30	180	0.7	62	1	0.07	0.12	6.4
Sepulga (0314-0303)																			
010	Duck Creek, UT to	EB05U2-52	980805	1741	29	22	1.0	6.7	122	19.0	SP	0.10	1 est.	2.0	115	12	0.02	0.05	4.5
020	Persimmon Creek, UT to	EB01U2-40	980806	0701	23	20	7.5	6.8	71	4.6	0.1 est.	0.10	80 est.	1.4	81	6	0.41	<0.004	4.2
030	Rocky Creek, UT to	EB04U2-45	980806	0801	24	23	0.3	6.7	178	15.3	SP	0.20	>433	5.4	149	19	<0.003	0.18	7.8
030	Deep Step Creek	EB5U4-30	001002	1510	24	19	0.6	6.3	140	14.0	0	---	100	3.1	174	14	0.055	0.075	4.0
040	Sepulga River, UT to	EB4U4-19	001002	1225	30	20	8.2	7.2	100	2.5	0.1	0.02	780	1.4	102	5	0.045	0.016	3.0
050	Fayette Branch[1]	EB06U3-46	990804	1230	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
060	Hard Labor Creek, UT to	EB6U4-43	001002	1700	23	19	4.3	6.9	100	6.2	0	---	300	1.4	110	5	0.013	0.027	3.0
060	Pigeon Creek	EB04U3-23	990816	1045	32	28	7.2	7.3	120	4.5	75.4	1.00	74	<1.0	141	12	0.218	0.01	4.0
Lower Conecuh (0314-0304)																			
010	Crossway Creek	EB01A1	970807	1826	28	24	6.8	4.8	28	0.8	*	0.20	54	0.2	28	<1	0.06	0.12	4.5
010	Conecuh River (oxbow), UT to[2]	EB05U1	970808	0750	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
010	Conecuh River[2]	EB06U1	970808	1000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
010	Conecuh River (oxbow), UT to	EB02U3-1	990823	1300	32	27	6.9	5.6	30	7.6	0		1220	3.1	32	8	0.303	0.024	4.0
010	Poley Creek	EB03U3-8	990825	1050	28	24	7.0	4.8	20	6.7	7.4	0.50	>400	<1.0	52	15	0.101	0.009	4.0
010	Conecuh River (oxbow), Ut to	EB08U2-1	980825	1205	31	27	3.3	4.8	50	7.4	2.2		>400	<1.0	30	7	0.212	0.014	4.0
030	Tributary to Murder Creek	EB01U3-28	990818	1050	32	22	9.3	7.7	420	<1.0	0.5	0.20	90	<1.0	265	5	1.09	0.057	7.0
090	Little Escambia Creek, UT to	EB07U2-15	980827	1025	30	22	6.6	4.7	16	4.1	0.2		128	<1.0	27	5	<0.005	<0.005	4.5
Escambia (0314-0305)																			
090	Hobbs Branch, UT to	EB10A2-27	980805	1554	29	24	0.5	5.3	53	14.8	SP	0.00	12 est.	2.2	89	12	0.003	0.04	5.5

1. No stream flow; No samples collected; habitat asessment and stream flow not conducted
2. sampling point unwadeable

SP=standing pools
est=estimated value

Appendix F-3b. Physical characteristics and habitat assessment results of sites assessed in the Perdido River (0314-01) and Escambia River (0314-03) Accounting Units as part of the Alabama Montoring and Assessment Program (ALAMAP).

Cataloging Unit		0314-0103	0314-0103	0314-0106	0314-0301	0314-0301	0314-0301	0314-0301	0314-0302	0314-0302	0314-0302
Station		EB06U2-29	EB07A3-42	PE01U2-12	EB01U1	EB02U2-9	EB02U1	EB2U4-11	EB08U3-15	EB03U2-21	EB03U1
Sub-watershed		020	190	050	020	020	020	030	010	030	050
Ecoregion/Subregion		65f	65f	65f	65d	65d	65d	65d	65d	65d	65d
Date (yymmdd)		980806	990811	980811	970806	980804	970806	000808	990804	980806	970807
Width (ft)		3	5	2	8	12	20	6	12	50	50
Canopy Cover[a]		S	S	S	MS	S	MS	S	50/50	50/50	O
Depth (ft)	Riffle										
	Run	0.2	0.5	0.3	0.5	0.5	1.5	0.4	0.8	1.5	2.5
	Pool	0.5	3.0	1.0	1.5	1.0	3.0	1.0	1.5	2.0	3.5
Substrate (%)	Bedrock										
	Boulder										
	Cobble										
	Gravel			10		3		45		1	
	Sand						85				
	Silt	96	77	70	55	80	1	45	85	80	82
	Detritus	2	3	2	10	2	13	2	2	2	2
	Clay	1	18	5	30	10	1	7	10	12	15
	Org. Silt	1	2	10	5	5		1	3	5	1
Habitat assessment form[b]		none	GP	GP	GP	GP	GP	GP	GP	GP	GP
Habitat Survey (% maximum)											
Instream Habitat Quality		---	55	67	45	30	37	82	40	50	47
Sediment Deposition		---	80	88	60	65	64	80	73	78	75
Sinuosity		---	50	80	65	65	48	55	55	50	40
Bank and Vegetative Stability		---	63	93	30	35	53	85	33	18	38
Riparian Measurements		---	68	100	35	95	100	90	90	85	85
Habitat Assessment Score		---	140	188	98	117	127	179	122	126	128
% Maximum		---	64	85	45	53	58	81	55	57	58
Assessment		---	Excellent	Excellent	Fair	Fair	Good	Excellent	Fair	Fair	Fair

a. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

b. Habitat assessment form: GP=glide/pool (Barbour et al. 1999); RR=riffle/run (Barbour et al. 1999)

c. No stream flow; No samples collected; habitat asessment and stream flow not conducted

Appendix F-3b. Physical characteristics and habitat assessment results of sites assessed in the Perdido River (0314-01) and Escambia River (0314-03) Accounting Units as part of the Alabama Montoring and Assessment Program (ALAMAP).

Cataloging Unit		0314-0302	0314-0303						0314-0304				
Station		EB04U1	EB01U2-40	EB5U4-30	EB4U4-19	EB06U3-46[c]	EB04U3-23	EB6U4-43	EB01A1	EB03U3-8	EB08U2-1	EB01U3-28	EB07U2-15
Sub-watershed		050	020	030	040	050	060	060	010	010	010	030	090
Ecoregion/Subregion		65f	65d	65d	65f		65f	65d	65f	65p	65p	65f	65f
Date (yymmdd)		970807	980806	001002	001002	980804	990816	001002	970807	990825	980825	990818	980827
Width (ft)		10	5	4	5		45	8	50	20	15	8	2
Canopy Cover[a]		50/50	S	S	S		O	S	MS	MS	MO	MS	S
Depth (ft)	Riffle	0.5							0.5			0.3	0.1
	Run	0.8	0.3	0.1			1.0	1.0	1.5	0.5			0.5
	Pool	1.5	0.5	1.0	2.0		4.0	3.0	2.5	4.0	3.5	1.0	1.0
Substrate (%)	Bedrock				1							40	
	Boulder						36					5	
	Cobble	20			4							2	
	Gravel	15	1				1		5			3	10
	Sand	13		90	84			92				14	
	Silt	20	87	2			60	1	45	30	10	5	40
	Detritus	20	2	8	11		1	7		3	40	30	30
	Clay	20	5				1		30	30	40	5	10
	Org. Silt	5	5				1		20	35	10	10	10
Habitat assessment form[b]		RR	GP	GP	GP		GP	GP	GP	GP	GP	RR	GP
Habitat Survey (% maximum)													
Instream Habitat Quality		50	43	33	32		75	43	87	82	77	40	70
Sediment Deposition		43	78	68	65		85	75	83	98	88	33	98
Sinuosity		85	65	40	75		50	65	95	55	55	50	95
Bank and Vegetative Stability		40	38	80	28		83	73	80	95	95	78	98
Riparian Measurements		48	90	93	95		80	100	85	100	100	78	100
Habitat Assessment Score		122	129	141	110		170	152	186	197	189	138	199
% Maximum		51	59	64	50		77	69	85	90	86	58	90
Assessment		Good	Good	Excellent	Good		Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

a. Canopy cover: S=shaded; MS=mostly shaded; 50/50=50% shaded; MO=mostly open; O=open

b. Habitat assessment form: GP=glide/pool (Barbour et al. 1999); RR=riffle/run (Barbour et al. 1999)

c. No stream flow; No samples collected; habitat asessment and stream flow not conducted

Appendix F-4. Clean Water Strategy Project
Lead Agency: ADEM

Purpose: Intensive water quality monitoring was conducted to evaluate the condition of the state's surface waters, identify or confirm problem areas, and to serve as a guide from which to direct future sampling efforts. Sampling stations were chosen where problems were known or suspected to exist, or where there was a lack of existing data. Data was collected monthly, June through October, 1996. All samples and in-situ measures were collected in accordance with ADEM Standard Operating Procedures and Quality Assurance/Quality Control manuals (ADEM 2000f).

Appendix F-4**.** Physical/chemical data

References: ADEM. 1999a. Alabama Clean Water Strategy Water Quality Assessment Report (1996). Alabama Department of Environmental Management. Montgomery, AL.

Appendix F-4. Water quality data collected from stations located within the Perdido River (0314-01) AND Escambia River (0314-03) Accounting Units during ADEM's 1996 Clean Water Strategy Project.

Sub-watershed #	Stream Name	Station	Date *yymmdd*	Time *24hr*	Stream Depth *ft*	Sampling Depth *ft*	Water Temp. *°C*	Dissolved Oxygen *mg/L*	pH *s.u.*	Conductivity *umhos @25°C*	Turbidity *NTU*	Stream Flow *cfs*	Fecal Coliform *col/100mL*	BOD-5 *mg/L*	TSS *mg/L*	NO_2+ NO_3-N *mg/L*	NH_3-N *mg/L*	TKN *mg/L*	Total-P *mg/L*
Perdido (0314-0106)																			
190	Rock Creek	PE01	960708	1135	1.0	0.3	25	4.1	6.6	83	28		>2400	3		0.01	0.11	1.2	0.155
190	Rock Creek	PE01	960821	1215	1.0	0.5	25	2.6	6.2	75	9		<1	1.6		<0.005	0.03	0.47	0.052
190	Rock Creek	PE01	961015	1245	0.5	0.3	18	4.7	6.2	104	6		70	1.2		<0.005	<0.01	0.54	<0.005
190	Rock Creek	PE02	960708	1155	9.0	0.3	25	4.0	6.4	106	26		>2400	3.2		0.74	0.37	1.7	0.336
190	Rock Creek	PE02	960821	1200	9.0	4.5	26	1.9	6.4	133	7		0	3		3.71	0.39	1.5	0.653
190	Rock Creek	PE02	961015	1230	9.0	4.5	19	4.3	6.5	167	8		260	4.6		2.76	0.65	2.4	0.639
190	Rock Creek	PE03	960731	1100	0.5	0.3	25	3.7	6.4	109	7		51	1		0.14	0.73	1.3	0.197
190	Rock Creek	PE03	960821	1245	1.0	0.5	25	4.9	6.3	89	4		42	1.4		0.51	0.02	0.11	0.108
190	Rock Creek	PE03	961015	1300	1.0	0.5	19	4.2	6.3	114	4		74	1.3		0.77	<0.01	0.69	0.118
Upper Conecuh (0314-0301)																			
010	Conecuh River	PE10	960724	0125	3.0	1.5	28	6.5	7.1	47	20			1.1		0.05	<0.015	0.61	0.08
010	Conecuh River	PE10	960807	0940	4.0	2.0	26	4.7	6.7	39	16			1.1		0.11	<0.015	<0.15	0.04
010	Conecuh River	PE10	961003	0850	6.0	3.0	21	5.1	6.9	60	22			1.1		0.05	<0.015	<0.006	0.11
030	Conecuh River	PE11	960724	1130	10.0	5.0	29	6.4	7.5	93	16			0.8		0.34	<0.015	<0.15	0.02
030	Conecuh River	PE11	960807	1055	10.0	5.0	26	5.2	7.2	108	12			0.7		0.35	<0.015	<0.15	0.03
030	Conecuh River	PE11	961003	1125	10.0	5.0	25	7.0	7.2	60	18			0.7		0.02	<0.015	0.23	0.07
040	Patsaliga Creek	PE06	960725	0945	6.0	3.0	28	6.2	8.7	95	6			0.5		0.29	<0.015	<0.15	0.02
040	Patsaliga Creek	PE06	961004	1015	3.0	1.5	25	8.5	7.6	20	18			0.6		0.26	<0.015	<0.006	0.05
040	Conecuh River	PE12	960725	0925	9.0	4.5	29	6.3	8.4	102	38			0.9		0.28	<0.015	<0.15	0.03
040	Conecuh River	PE12	960807	1205	8.0	4.0	27	6.4	7.0	87	14			0.4		0.03	<0.015	<0.15	0.02
040	Conecuh River	PE12	961003	1245	8.0	4.0	26	7.5	7.3	59	16	60		0.6		0.21	<0.015	0.22	0.006
050	Conecuh River	PE13	960725	1030	7.0	3.5	29	5.6	7.5	84	9			0.5		0.18	<0.015	0.24	0.02
050	Conecuh River	PE13	960808	0855	7.0	3.5	28	6.5	6.9	95	8			0.3		0.23	<0.015	<0.15	0.04
050	Conecuh River	PE13	961004	0935			25	7.9	7.5	50	8			0.7		0.24	<0.015	0.25	0.07
Patsaliga (0314-0302)																			
030	Patsaliga Creek	PE04	960724	0930	6.0	3.0	27	5.9	7.1	77	18			0.9		0.06	<0.015	0.44	0.04
030	Patsaliga Creek	PE04	960807	1030	5.0	2.5	26	6.1	6.8	69	24			0.2		0.09	<0.015	<0.15	0.02
030	Patsaliga Creek	PE04	961003	0955	6.0	3.0	24	6.0	7.1	51	18			1.6		0.04	<0.015	0.041	0.08
050	Patsaliga Creek	PE05	960724	1030	1.0	0.5	27	8.2	7.5	39	42			0.7		0.10	<0.015	0.17	0.02
050	Patsaliga Creek	PE05	960807	1140	2.0	1.0	25	7.6	6.6	40	18			0.5		0.04	<0.015	<0.15	0.03
050	Patsaliga Creek	PE05	961003	1210	3.0	1.5	24	8.0	7.3	61	20			1.3		0.08	<0.015	0.21	0.06

Appendix F-4. Water quality data collected from stations located within the Perdido River (0314-01) AND Escambia River (0314-03) Accounting Units during ADEM's 1996 Clean Water Strategy Project.

Sub-watershed #	Stream Name	Station	Date *yymmdd*	Time *24hr*	Stream Depth *ft*	Sampling Depth *ft*	Water Temp. *^{o}C*	Dissolved Oxygen *mg/L*	pH *s.u.*	Conductivity *umhos @25^{o}C*	Turbidity *NTU*	Stream Flow *cfs*	Fecal Coliform *col/100mL*	BOD-5 *mg/L*	TSS *mg/L*	NO_2+ NO_3-N *mg/L*	NH_3-N *mg/L*	TKN *mg/L*	Total-P *mg/L*
Sepulga (0314-0303)																			
040	Sepulga River	PE17	960827	1030	1.0	0.5	27	7.2	7.2	78	10		54	<2		0.08	<0.01	0.18	<0.005
040	Sepulga River	PE17	961024	1245	1.6	0.8	16	8.6	7.3	109	9		33	<1		0.03	<0.01	<0.1	<0.005
070	Sepulga River	PE18	960731	1145	2.7	0.3	26	7.1	7.2	69	22		105	<1		0.12	<0.01	0.58	0.078
070	Sepulga River	PE18	960827	1100	2.7	1.3	26	7.5	7.4	84	48		288	<2		0.13	<0.01	0.3	<0.005
040	Sepulga River	PE17	960731	1225	2.0	0.3	25	6.7	7.2	67	28		77	1		0.12	<0.01	0.55	0.022
070	Sepulga River	PE18	961024	1200	1.6	0.8	16	9.2	7.6	133	6		38	<1		0.09	<0.01	<0.1	<0.005
Lower Conecuh (0314-0304)																			
010	Conecuh River	PE14	960731	1025	6.7	0.3	27	6.7	7.0	87	21		57	<1		0.15	<0.01	0.38	0.01
010	Conecuh River	PE14	960822	1240	6.7	3.3	28	8.2	7.1	91	9		21	1		0.11	<0.01	0.5	<0.005
010	Conecuh River	PE14	961017	1205	1.3	0.6	21	8.0	7.0	104	0		11	<1		0.12	<0.01	0.67	<0.005
Escambia (0314-0305)																			
020	Big Escambia Creek	PE07	960730	1050	1.0	0.3	23	7.2	6.2	44	5		33	<1		0.14	<0.01	0.04	<0.005
020	Big Escambia Creek	PE07	960822	1130	1.0	0.5	23	8.2	6.1	40	3			<1		0.21	<0.01	0.17	<0.005
020	Big Escambia Creek	PE07	961017	1045	1.3	0.6	18	8.2	6.0	42	0		112	<1		0.24	<0.01	<0.1	<0.005
020	Big Escambia Creek	PE08	960730	1030	2.3	0.3	23	7.6	6.4	37	5		60	<1		0.13	<0.01	0.27	0.005
020	Big Escambia Creek	PE08	960822	1045	2.3	1.1	23	8.6	5.7	32	3		18	<1		0.18	<0.01	<0.1	<0.005
020	Big Escambia Creek	PE08	961017	1010	2.0	1.0	18	8.3	5.6	39	0		21	<1		0.16	<0.01	<0.1	<0.005
030	Sizemore Creek	PE15	960730	0945	3.3	0.3	23	6.5	7.1	70	6		104	1		1.10	0.03	0.3	0.017
030	Sizemore Creek	PE15	960822	1000	3.3	1.6	22	6.9	5.8	64	6		64	1		0.93	0.01	0.21	0.014
030	Sizemore Creek	PE15	961017	0920	3.0	1.5	19	7.3	5.6	70	0		74	<1		0.95	<0.01	0.1	<0.005
030	Sizemore Creek	PE16	960730	1010	2.0	0.3	22	7.3	7.1	51	7		114	<1		0.63	<0.01	0.23	0.059
030	Sizemore Creek	PE16	960822	1025	2.0	1.0	22	8.6	6.0	43	6		58	<1		0.60	0.01	0.18	0.029
030	Sizemore Creek	PE16	961017	0950	3.3	1.6	19	8.4	5.8	49	0		82	<1		0.49	<0.01	<0.1	<0.005
040	Big Escambia Creek	PE09	960730	1150	6.7	0.3	24	7.6	7.3	43	11		74	<1		0.24	<0.01	0.38	0.006
040	Big Escambia Creek	PE09	960822	1200	6.7	3.3	24	8.8	6.0	33	5		27	1		0.29	<0.01	<0.1	<0.005
040	Big Escambia Creek	PE09	961017	1125	4.3	2.1	20	8.5	5.8	42	0		56	<1		0.29	<0.01	0.54	<0.005

Appendix G. Alabama's 2000 Section 303(d) List Fact Sheet

Background

Section 303(d) of the Clean Water Act requires that each state identify those waters that do not currently support designated uses, and establish a priority ranking of the waters taking into account the severity of the pollution and the uses to be made of the waters. For each water on the list, the state is required to establish the total maximum daily load (TMDL) for the pollutant or pollutants of concern at a level necessary to implement the applicable water quality standards. Guidance issued in August 1997 by the Environmental Protection Agency (EPA) suggests that states also include a schedule for TMDL development. The schedule is included as part of Alabama's 2000 list and provides expected completion dates for waterbodies on the list. Expected completion dates range from one to ten years following EPA approval of the 2000 list and were established to be consistent with the TMDL completion schedule outlined in EPA's settlement agreement with plaintiffs in the 1998 TMDL lawsuit. As a result, TMDL completion dates for many of the segments shown on the 2000 Section 303(d) list may be different than those shown on the 1998 list.

2000 Section 303(d) List

Alabama's 2000 Section 303(d) list includes segments of rivers, streams, lakes, reservoirs, and estuaries that either do not support or partially support their currently designated use or uses. Most of the waterbodies on the 2000 Section 303(d) list also appeared on Alabama's 1998 Section 303(d) list, which was developed using the 1996 Water Quality Report to Congress (305(b) Report). The Department has attempted to obtain and evaluate all existing and readily available water quality related data and information. The 2000 §303(d) list was developed using the 1998 §303(d) list as the starting point. Data in EPA's STOrage and RETrieval (STORET) database, information from §319 nonpoint assessments, other federal and state agencies, industries, and watershed initiatives were evaluated as the 2000 §303(d) list was compiled. Any individual or organization could submit additional data or information during the advertised comment period relative to water quality impairment in stream segments not included on the draft list. Chemical, physical, and biological data collected primarily during the previous five years were considered when adding new waterbodies to the 2000 Section 303(d) list. Data older than five years was generally not considered, except when the data may be used to demonstrate water quality trends. Data sources include the Alabama Department of Environmental Management, the Alabama Department of Public Health, the Geological Survey of Alabama, the United States Geological Survey, the Tennessee Valley Authority, other public agencies, universities, and industries.

The list contains information such as the waterbody name, county(s) in which the listed segment is located, dates when the data on which the listing is based were collected, cause(s) for the use impairment, the source(s) of the pollutant(s) causing the impairment, the size of the impaired segment, and the location of the listed waterbody. Also included on the list is the segment's priority ranking (high, low, medium), which was developed using the attached prioritization strategy.

Use-support status for waterbodies was determined in several ways. In cases where the monitored data was primarily chemical data from the water column, use-support status was based on the percentage of measurements not meeting the applicable water quality standard. When 10 percent or fewer measurements exceeded a water quality standard, the waterbody was considered to be fully supporting its designated use. When less than 25 percent but more than 10 percent of the measurements exceeded a water quality standard, the waterbody was considered to be partially supporting its designated use. When more than 25 percent of the measurements exceeded a water quality standard, the waterbody was considered to be not supporting its designated use. In other waterbodies, use-support status was assigned based on fish consumption or shellfish harvesting advisories issued by the Alabama Department of Public Health. Best professional judgment was used in assigning use-support status in cases where monitored data was limited in areal extent or temporal coverage and where numeric water quality criteria were not available. Where available, biological assessment data were used in combination with other surface water quality data or information to arrive at an overall use support determination.

Changes Since the 1998 Section 303(d) List

A number of differences exist between the 2000 Section 303(d) List and the 1998 list. Many of the changes were to correct errors in the 1998 list and to provide additional or updated information about waterbodies on the list. Other significant changes since 1998 include the addition and deletion of waterbodies. The following tables show the additions to (Table 1) and deletions from (Table 2) the 1998 Section 303(d) List and provide a rationale for the changes. In Table 1 the basis for listing each new segment is given.

Changes have also been made to the TMDL completion schedule included on the 2000 Section 303(d) list. The changes reflect the pace of TMDL development that can reasonably be expected given ADEM's current funding and staffing levels and the need to meet court-ordered TMDL completion dates. The dates shown are for completion of all TMDLs required for the listed segment. Where more than one TMDL is required for a segment, TMDLs for specific pollutants may be developed well in advance of the expected completion date given on the list.

Appendix G - Table 1

Alabama's 2000 §303(d) List

Waters Added to the List

The waterbodies listed in the following table were added to Alabama's 2000 §303(d) list for the reasons presented in the table.

Waterbody ID	Waterbody Name	River Basin	County	Pollutant	Basis for Addition to the List
AL/03160205-040_01	Bay Minette Creek – from its mouth at Bay Minette to its source	Mobile	Baldwin	Mercury	Alabama Fish Consumption Advisory issued by the Alabama Department of Public Health in March 2000 advising "No Consumption" of largemouth bass.
AL/03160204-050_04	Chickasaw Creek – from its mouth at Mobile River to its source	Mobile	Mobile	Mercury	Alabama Fish Consumption Advisory issued by the Alabama Department of Public Health in March 2000 advising "No Consumption" of largemouth bass.
AL/03160205-030_01	Fowl River – from its mouth at Mobile Bay to its source (includes part of East Fowl River)	Mobile	Mobile	Mercury	Alabama Fish Consumption Advisory issued by the Alabama Department of Public Health in March 2000 advising "No Consumption" of largemouth bass.
AL/Mobile R_01	Mobile River – from its mouth at Mobile Bay to Cold Creek	Mobile	Mobile	Mercury	Alabama Fish Consumption Advisory issued by the Alabama Department of Public Health in March 2000 advising "Limited Consumption" of largemouth bass.
AL/03160204-060_02	Threemile Creek – from Telegraph Road to Illinois Central Gulf Railroad	Mobile	Mobile	Chlordane	Alabama Fish Consumption Advisory issued by the Alabama Department of Public Health in March 2000 advising "Limited Consumption" of striped bass and speckled trout and "No Consumption" of Atlantic croaker .
AL/03140106-070_02	Brushy Creek - from the Alabama – Florida state line to Boggy Branch	Perdido-Escambia	Escambia	Organic Enrichment / Low Dissolved Oxygen	Of 4 dissolved oxygen measurements made by ADEM at Escambia Co. Rd. 1 between May and September 1999, all were less than the 5.0 mg/l criterion.

Waterbody ID	Waterbody Name	River Basin	County	Pollutant	Basis for Addition to the List
AL/03150110-050_01	Moores Mill Creek – from its mouth at Chewacla Creek to its source	Tallapoosa	Lee	Sedimentation (Siltation)	Sedimentation was identified as the principle cause of biological impairment at a site upstream of Chewacla Lake at site MMLT-1a in 1998. ("Monitoring of Watersheds Associated with Alabama State Parks Utilizing Chemical, Physical, and Biological Assessments", ADEM, p. 27, 1999.)
AL/Alabama R_03	Alabama River – from Pursley Creek to Beaver Creek	Alabama	Wilcox	Nutrients Organic Enrichment / Low Dissolved Oxygen	This segment separates two segments already included on the §303(d) list for the indicated causes. Of 106 dissolved oxygen measurements made at river monitoring stations within this segment between 1995 and 1999, 12 (11.3%) were less than the 5.0 mg/l criterion.
AL/06030002-160-02	Hester Creek – from Mountain Fork to its source	Tennessee	Madison	Fecal Coliform	Of 25 samples collected by USGS in 1999, 5 samples exceeded the 2000 colonies/100 ml single sample criterion for fecal coliform bacteria.
AL/06030002-190-02	Flint River – From U.S. Highway 72 (RM 27.3) to Mountain Fork	Tennessee	Madison	Fecal Coliform	Of 17 samples collected by USGS in 1999, 3 samples exceeded the 2000 colonies/100 ml single sample criterion for fecal coliform bacteria.
AL/03150202-020_01	Lee Branch – From Lake Purdy to its source	Cahaba	Shelby	Fecal Coliform	Of 10 samples collected by USGS between 1996 and 1999 at station 242340575, 4 samples exceeded the 2000 colonies/100 ml single sample criterion for fecal coliform bacteria.
AL/03170008-090_04	Collins Creek – From Big Creek to its source	Escatawpa	Mobile	Fecal Coliform	Of 23 samples collected by USGS between 1996 and 1999 at station 2479950, 3 samples exceeded the 2000 colonies/100 ml single sample criterion for fecal coliform bacteria.

Appendix G - Table 2

Alabama's 2000 §303(d) List

Waters Removed from the 1998 List

The waterbodies listed in the following table were removed from Alabama's 1998 §303(d) list and are not included on the 2000 §303(d) list for the reasons presented.

Waterbody ID	Waterbody Name	River Basin	County	Pollutant	Basis for Addition to the List
AL/03160205-040_01	Bay Minette Creek – from its mouth at Bay Minette to its source	Mobile	Baldwin	Mercury	Alabama Fish Consumption Advisory issued by the Alabama Department of Public Health in March 2000 advising "No Consumption" of largemouth bass.
AL/03160204-050_04	Chickasaw Creek – from its mouth at Mobile River to its source	Mobile	Mobile	Mercury	Alabama Fish Consumption Advisory issued by the Alabama Department of Public Health in March 2000 advising "No Consumption" of largemouth bass.
AL/03160205-030_01	Fowl River – from its mouth at Mobile Bay to its source (includes part of East Fowl River)	Mobile	Mobile	Mercury	Alabama Fish Consumption Advisory issued by the Alabama Department of Public Health in March 2000 advising "No Consumption" of largemouth bass.
AL/Mobile R_01	Mobile River – from its mouth at Mobile Bay to Cold Creek	Mobile	Mobile	Mercury	Alabama Fish Consumption Advisory issued by the Alabama Department of Public Health in March 2000 advising "Limited Consumption" of largemouth bass.
AL/03160204-060_02	Threemile Creek – from Telegraph Road to Illinois Central Gulf Railroad	Mobile	Mobile	Chlordane	Alabama Fish Consumption Advisory issued by the Alabama Department of Public Health in March 2000 advising "Limited Consumption" of striped bass and speckled trout and "No Consumption" of Atlantic croaker .
AL/03140106-070_02	Brushy Creek - from the Alabama – Florida state line to Boggy Branch	Perdido-Escambia	Escambia	Organic Enrichment / Low Dissolved Oxygen	Of 4 dissolved oxygen measurements made by ADEM at Escambia Co. Rd. 1 between May and September 1999, all were less than the 5.0 mg/l criterion.

Waterbody ID	Waterbody Name	River Basin	County	Pollutant	Basis for Addition to the List
AL/03150110-050_01	Moores Mill Creek – from its mouth at Chewacla Creek to its source	Tallapoosa	Lee	Sedimentation (Siltation)	Sedimentation was identified as the principle cause of biological impairment at a site upstream of Chewacla Lake at site MMLT-1a in 1998. ("Monitoring of Watersheds Associated with Alabama State Parks Utilizing Chemical, Physical, and Biological Assessments", ADEM, p. 27, 1999.)
AL/Alabama R_03	Alabama River – from Pursley Creek to Beaver Creek	Alabama	Wilcox	Nutrients Organic Enrichment / Low Dissolved Oxygen	This segment separates two segments already included on the §303(d) list for the indicated causes. Of 106 dissolved oxygen measurements made at river monitoring stations within this segment between 1995 and 1999, 12 (11.3%) were less than the 5.0 mg/l criterion.
AL/06030002-160-02	Hester Creek – from Mountain Fork to its source	Tennessee	Madison	Fecal Coliform	Of 25 samples collected by USGS in 1999, 5 samples exceeded the 2000 colonies/100 ml single sample criterion for fecal coliform bacteria.
AL/06030002-190-02	Flint River – From U.S. Highway 72 (RM 27.3) to Mountain Fork	Tennessee	Madison	Fecal Coliform	Of 17 samples collected by USGS in 1999, 3 samples exceeded the 2000 colonies/100 ml single sample criterion for fecal coliform bacteria.
AL/03150202-020_01	Lee Branch – From Lake Purdy to its source	Cahaba	Shelby	Fecal Coliform	Of 10 samples collected by USGS between 1996 and 1999 at station 242340575, 4 samples exceeded the 2000 colonies/100 ml single sample criterion for fecal coliform bacteria.
AL/03170008-090_04	Collins Creek – From Big Creek to its source	Escatawpa	Mobile	Fecal Coliform	Of 23 samples collected by USGS between 1996 and 1999 at station 2479950, 3 samples exceeded the 2000 colonies/100 ml single sample criterion for fecal coliform bacteria.
AL/03160109-020-01	Duck Creek	Black Warrior	Cullman	pH	Of 73 measurements made by ADEM and others between 1991 and 1998, only 3 values (2.7%) were outside acceptable limits.

Waterbody ID	Waterbody Name	River Basin	County	Pollutant	Basis for Addition to the List
AL/03160109-180-01	Wolf Creek	Black Warrior	Walker	pH	Of 20 measurements made by ADEM in 1996, only 1 value (5%) was outside acceptable limits.
AL/03160109-180-01	Wolf Creek	Black Warrior	Walker	Metals	Of 15 measurements of total iron made by ADEM in 1996, none exceed EPA's guidance criterion of 1.0 mg/l.
AL/03160111-150-01	Short Creek	Black Warrior	Jefferson	pH	Of 52 measurements made by ADEM between 1995 and 1999, 1 value (1.9%) was outside acceptable limits.
AL/03160111-150-01	Short Creek	Black Warrior	Jefferson	Organic enrichment / DO	Of 50 measurements made by ADEM between 1995 and 1999, 2 values (4.0%) were less than the 5.0 mg/l criterion.
AL/30160112-050-01	Big Yellow Creek	Black Warrior	Tuscaloosa	pH	Of 17 measurements made by ADEM between 1988 and 1999, none were outside acceptable limits.
AL/03160112-110-01	Black Warrior River	Black Warrior	Tuscaloosa	Organic enrichment / DO	Of 42 measurements made by ADEM between 1995 and 1998, only 1 value (2.4%) was less than the 4.0 mg/l criterion.
AL/03150202-010-01	Big Black Creek	Cahaba	St. Clair	Siltation	Benthic invertebrate communities were assessed by ADEM in 1999 at 4 stations and were rated as good or excellent. Habitat at these stations was also assessed as good or excellent. In 1997 USGS benthic invertebrate assessments conducted by USGS indicated that the communities were unimpaired to slightly impaired.
AL/03150202-010-01	Big Black Creek	Cahaba	St. Clair	Other habitat alteration	Benthic invertebrate communities were assessed by ADEM in 1999 at 4 stations and were rated as good or excellent. Habitat at these stations was also assessed as good or excellent. In 1997 USGS benthic invertebrate assessments conducted by USGS indicated that the communities were unimpaired to slightly impaired.

Waterbody ID	Waterbody Name	River Basin	County	Pollutant	Basis for Addition to the List
AL/03150202-030-05	Little Shades Creek	Cahaba	Jefferson	Organic enrichment / DO	Of 36 measurements made by ADEM in 1998, only 1 value (2.8%) was less than the 5.0 mg/l criterion.
AL/03150202-030-05	Little Shades Creek	Cahaba	Jefferson	Priority Organics	Of 4 measurements made by ADEM in 1998 and analyzed for volatile organic compounds, none were found in excess of the method detection limit of 5 ug/l.
AL/03150202-030-05	Little Shades Creek	Cahaba	Jefferson	Nonpriority Organics	Of 4 measurements made by ADEM in 1998 and analyzed for volatile organic compounds, none were found in excess of the method detection limit of 5 ug/l.
AL/03130003-180-01	Barbour Creek	Chattahoochee	Barbour	Organic enrichment / DO	Of 30 measurements made by ADEM and Auburn University in 1998 and 1999, none were less than the 5.0 mg/l criterion.
AL/03130002-200-01	West Point Lake	Chattahoochee	Chambers	Pesticides (Chlordane)	Declining chlordane levels in fish resulted in the removal of this segment from the March 2000 Fish Consumption Advisory issued by the Alabama Department of Public Health.
AL/03130002-310-01	Lake Harding	Chattahoochee	Lee	Pesticides (Chlordane)	Declining chlordane levels in fish resulted in the removal of this segment from the March 2000 Fish Consumption Advisory issued by the Alabama Department of Public Health.
AL/03140201-150-01	UT to Harrand Creek	Choctawhatchee	Coffee	Organic enrichment / DO	Of 5 measurements made by ADEM in 1999, none were less than the 5.0 mg/l criterion.
AL/03150106-340-02	Lake Neely Henry	Coosa	Etowah	Priority Organics (PCBs)	This pollutant for this segment was mistakenly included on the 1998 §303(d) list. The 1998, 1999, and 2000 Fish Consumption Advisory lists published by the Alabama Department of Public Health do not include a consumption advisory for Lake Neely Henry.

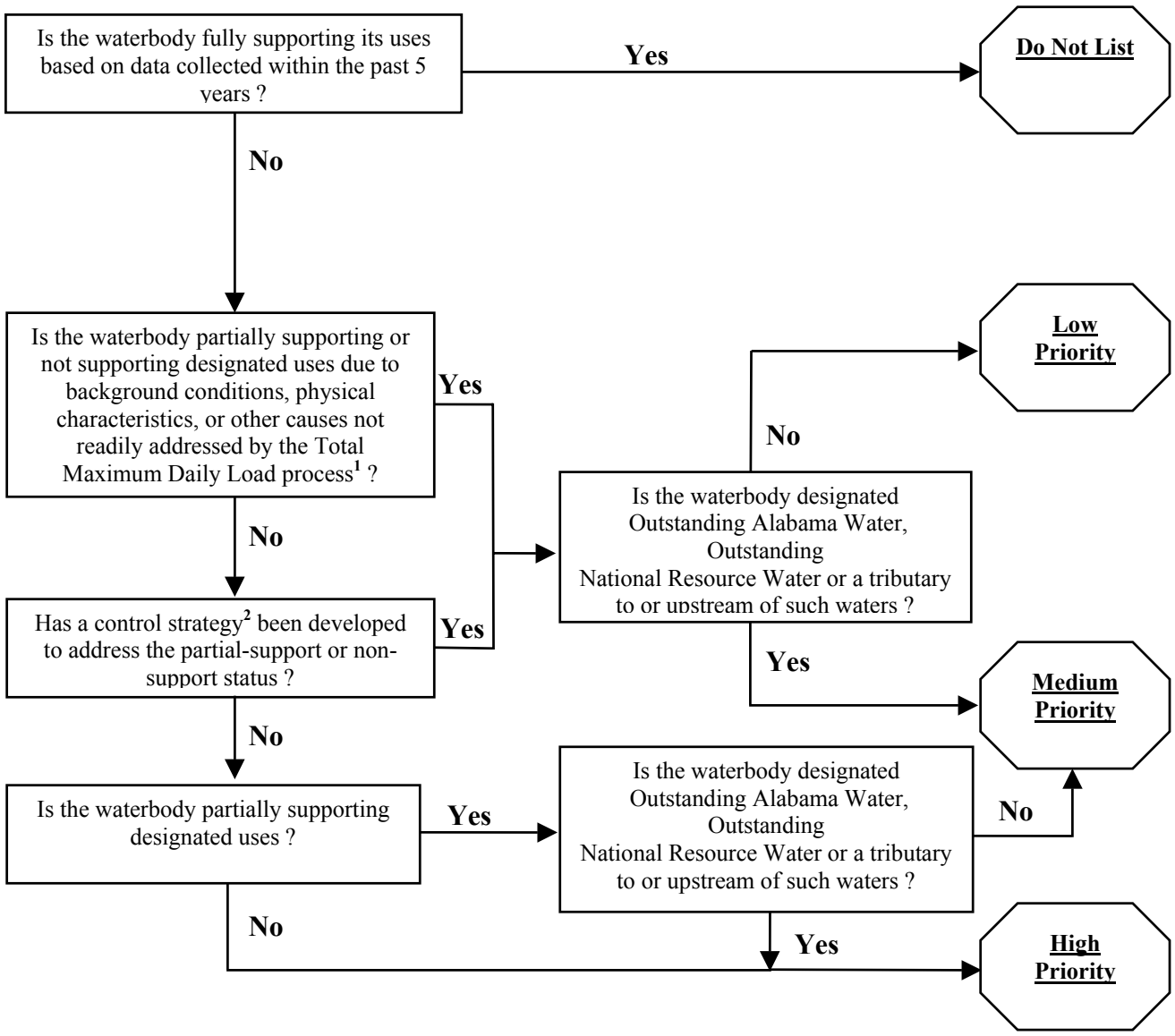
Waterbody ID	Waterbody Name	River Basin	County	Pollutant	Basis for Addition to the List
AL/03150107-190-01	Lay Lake	Coosa	Talladega	Flow Alteration	This cause was inadvertently included on the 1998 §303(d) list. It does not appear on the 1994 or 1996 lists. Flow alteration is not a pollutant for which a TMDL can be developed and is, therefore, not appropriate for inclusion on the §303(d) list.
AL/03150105-280-01	Weiss Lake	Coosa	Cherokee	Organic enrichment / DO	Of 565 measurements made by ADEM and others between 1989 and 1999, 11 (1.9%) were less than the 5.0 mg/l criterion.
AL/03150105-240-01	Wolf Branch	Coosa	Cherokee	Organic enrichment / DO	Of 8 measurements made by ADEM in 1999, none were less than the 5.0 mg/l criterion.
AL/03150105-240-01	Wolf Branch	Coosa	Cherokee	Ammonia	Of 7 measurements made by ADEM in 1999, all were less than the method detection level of 0.015 mg/l.
AL/03170008-090-01	Boggy Branch	Escatawpa	Mobile	Pathogens	Of 23 measurements made by USGS between 1996 and 1999, 2 (8.7%) exceeded the 2000 colonies/100 ml criterion.
AL/03170009-030-01	Bayou La Batre	Escatawpa	Mobile	pH	Low pH values measured at Alabama Highway 188 are due to natural conditions (acid clay soils and tannic acid from decaying vegetation) and are typical of coastal blackwater streams.
AL/03170008-090-02	Hamilton Creek	Escatawpa	Mobile	Organic enrichment / DO	Of 129 measurements made by USGS between 1990 and 1999, none (0.0%) were less than the 5.0 mg/l criterion.
AL/03140107-040-01	Intracoastal Waterway	Mobile	Baldwin	Temperature	Of 675 measurements made by ADEM at trend station IC1 and at Coastal ALAMAP stations in Regions 4 and 6 between 1990 and 1999, 18 (2.7%) exceeded the temperature criterion of 90 °F.

Waterbody ID	Waterbody Name	River Basin	County	Pollutant	Basis for Addition to the List
AL/03160204-050-03	Chickasaw Creek	Mobile	Mobile	pH	Low pH values measured at several locations throughout this watershed are due to natural conditions (acid clay soils and tannic acid from decaying vegetation) and are typical of coastal blackwater streams.
AL/03160204-060-01	Threemile Creek	Mobile	Mobile	pH	Of 68 measurements made by ADEM between 1990 and 1999, six (8.8%) were outside acceptable limits.
AL/03160205-020-02	Dog River	Mobile	Mobile	pH	Low pH values measured at Navco Park are due to natural conditions (acid clay soils and tannic acid from decaying vegetation) and are typical of coastal blackwater streams.
AL/03160205-050-03	Cowpen Creek	Mobile	Baldwin	pH	Low pH values measured at Baldwin County Road 33 near Clay City are due to natural conditions (acid clay soils and tannic acid from decaying vegetation) and are typical of coastal blackwater streams.
AL/03160205-050-02	Fish River	Mobile	Baldwin	pH	Low pH values measured at several locations throughout this watershed are due to natural conditions (acid clay soils and tannic acid from decaying vegetation) and are typical of coastal blackwater streams.
AL/03140103-050-01	Indian Creek	Perdido-Escambia	Covington	Organic enrichment / DO	The point source contributing to low dissolved oxygen levels in 1985 was removed in 1988. Data collected in 1999 indicates full use support.
AL/03140103-050-01	Indian Creek	Perdido-Escambia	Covington	Nutrients	The point source contributing nutrients in 1985 was removed in 1988. Data collected in 1999 indicates full use support.
AL/03140103-080-01	Bay Branch	Perdido-Escambia	Covington	Organic enrichment / DO	The point source contributing to low dissolved oxygen levels in 1985 was removed in 1988. Data collected in 1999 indicates full use support.

Waterbody ID	Waterbody Name	River Basin	County	Pollutant	Basis for Addition to the List
AL/03140103-080-01	Bay Branch	Perdido-Escambia	Covington	Pathogens	Of 9 measurements made by ADEM at several locations in 1991 and 1999, none exceeded the 2000 colonies/100 ml criterion.
AL/03140106-190-01	Blackwater River	Perdido-Escambia	Baldwin	Metals (Cu, Pb, Zn)	Metal concentrations at the USGS sampling location are the result of natural conditions and are, therefore, not a violation of Alabama water quality standards.
AL/03150109-050-01	Tallapoosa River	Tallapoosa	Randolph	Flow alteration	Flow alteration is not a pollutant for which a TMDL can be developed and is, therefore, not appropriate for inclusion on the §303(d) list.
AL/03150110-140_01	Line Creek	Tallapoosa	Macon	Flow alteration	Flow alteration is not a pollutant for which a TMDL can be developed and is, therefore, not appropriate for inclusion on the §303(d) list.
AL/06030002-160-02	Hester Creek	Tennessee	Madison	Organic enrichment / DO	Of 38 measurements made by ADEM, TVA, and USGS between 1997 and 1999, none were less than the 5.0 mg/l criterion.
AL/06030002-160-02	Hester Creek	Tennessee	Madison	Siltation	The 1997 TVA habitat assessment rates the habitat for this segment as excellent. The maximum turbidity and total suspended solids levels measured by TVA in 1997 were 5.3 NTU and 5.0 mg/l, respectively.
AL/06030002-160-01	Mountain Fork	Tennessee	Madison	Siltation	The 1997 TVA habitat assessment rates the habitat for this segment as excellent. In 1998 ADEM assessed two reaches of Mountain Fork at three sites. Habitat quality was assessed as excellent at all three sites. The maximum turbidity and total suspended solids levels measured by ADEM were 11.2 NTU and 12.0 mg/l, respectively, during a high flow event on May 13, 1998.

Waterbody ID	Waterbody Name	River Basin	County	Pollutant	Basis for Addition to the List
AL/06030002-160-01	Mountain Fork	Tennessee	Madison	Organic enrichment / DO	Of 13 measurements made by ADEM and TVA in 1997 and 1998, none were less than the 5.0 mg/l criterion.
AL/06030002-330-08	Rock Creek	Tennessee	Cullman	Organic enrichment / DO	Of 5 measurements made by TVA in 1997, none were less than the 5.0 mg/l criterion.
AL/06030005-040-01	Town Creek	Tennessee	Lawrence	pH	Of 81 measurements made by ADEM and TVA between 1988 and 1998, 7 (8.6%) were outside acceptable limits.
AL/06030001-280-01	Short Creek	Tennessee	Marshall	Pathogens	Of 62 measurements made by ADEM at several locations between 1996 and 1998, 3 (4.8%) exceeded the 2000 colonies/100 ml criterion.
AL/03160106-200-01	Tombigbee River	Upper Tombigbee	Pickens	Flow alteration	Flow alteration is not a pollutant for which a TMDL can be developed and is, therefore, not appropriate for inclusion on the §303(d) list.

2000 §303(d) List Prioritization Strategy



1 Examples of other causes not readily addressed by the TMDL process include in place contaminants, flow regulation/modification, unknown sources, and atmospheric deposition.

2 Examples of control strategies include wastewater treatment upgrades or removal, best management practice implementation, and permit modifications.